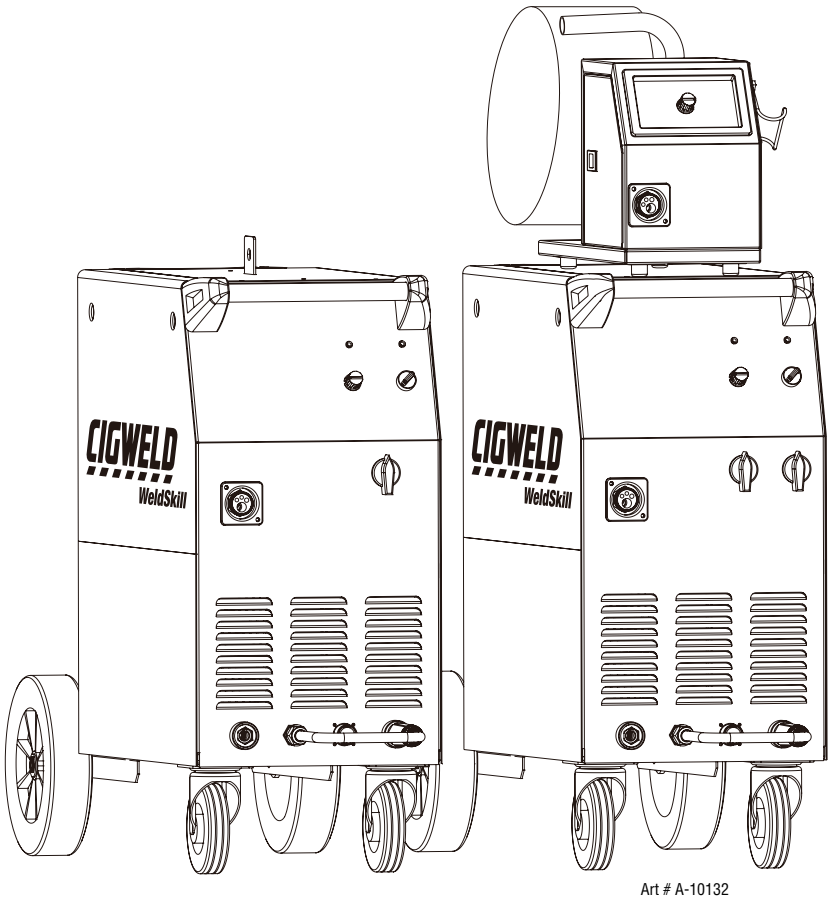
CIGWELD
WeldSkill®

250
350
WELDSKILL
MIG WELDING MACHINE

4R WIREFEEDER (Optional)



Art # A-10132

Service Manual

Reversion: AC **Issue Date:** December 27, 2013 **Manual No.:** 0-5186

Operating Features:

GMAW FCAW		CV	DC	250 AMP	1 PHASE	240 V	350 AMP	3 PHASE	415 V

WE APPRECIATE YOUR BUSINESS!

Congratulations on your new CIGWELD product. We are proud to have you as our customer and will strive to provide you with the best service and reliability in the industry. This product is backed by our extensive warranty and world-wide service network. To locate your nearest distributor or service provider call +1300 654 674, or visit us on the web at **www.victortechnologies.com**

This Service Manual has been designed to instruct you on the correct use and operation of your CIGWELD product. Your satisfaction with this product and its safe operation is our ultimate concern. Therefore please take the time to read the entire manual, especially the Safety Precautions. They will help you to avoid potential hazards that may exist when working with this product. We have made every effort to provide you with accurate instructions, drawings, and photographs of the product(s) we used when writing this manual. However errors do occur and we apologize if there are any contained in this manual.

Due to our constant effort to bring you the best products, we may make an improvement that does not get reflected in the manual. If you are ever in doubt about what you see or read in this manual with the product you received, then check for a newer version of the manual on our website or contact our customer support for assistance.

YOU ARE IN GOOD COMPANY!

The Brand of Choice for Contractors and Fabricators Worldwide.

CIGWELD is the Market Leading Brand of Arc Welding Products for Victor Technologies. We are a mainline supplier to major welding industry sectors in the Asia Pacific and emerging global markets including; Manufacturing, Construction, Mining, Automotive, Engineering, Rural and DIY.

We distinguish ourselves from our competition through market-leading, dependable products that have stood the test of time. We pride ourselves on technical innovation, competitive prices, excellent delivery, superior customer service and technical support, together with excellence in sales and marketing expertise.

Above all, we are committed to develop technologically advanced products to achieve a safer working environment for industry operators.

WARNING

Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing the equipment.

While the information contained in this Manual represents the Manufacturer's best judgement, the Manufacturer assumes no liability for its use.

Welding Power Supply
Service Manual Number 0-5186 for:

WeldSkill 250 Compact MIG Plant (Asia)	Part Number W1003400
WeldSkill 350 Compact MIG Plant (Asia)	Part Number W1003500
WeldSkill 250 Compact MIG Plant (South Pacific)	Part Number W1004500
WeldSkill 350 Compact MIG Plant (South Pacific)	Part Number W1004600
WeldSkill 4R Wirefeeder Plant (Optional-All Regions)	Part Number W3000401

Published by:
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71 Gower Street
Preston, Victoria, Australia, 3072

www.victortechnologies.com

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Publication Date: May 9, 2012
Version AC Date: December 27, 2013

Record the following information for Warranty purposes:

Where Purchased: _____

Purchase Date: _____

Equipment Serial #: _____

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CIGWELD LIMITED WARRANTY

TERMS OF WARRANTY-JANUARY 2011

WARRANTY SCHEDULE-JANUARY 2011

GLOBAL CUSTOMER SERVICE CONTACT INFORMATION

SECTION 1:
SAFETY INSTRUCTIONS AND WARNINGS

WARNING

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Some of these practices apply to equipment connected to power lines; other practices apply to engine driven equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld.

Safe practices are outlined in the Australian Standard AS1674.2-2007 entitled: Safety in welding and allied processes Part 2: Electrical. This publication and other guides to what you should learn before operating this equipment are listed at the end of these safety precautions. **HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.**

1.01 Arc Welding Hazards

WARNING

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.

WARNING

ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

1. Use a Welding Helmet or Welding Faceshield fitted with a proper shade of filter (see ANSI Z49.1 and AS 1674 listed in Safety Standards) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields recommended.
3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved ear plugs or ear muffs if noise level is high.

6. Never wear contact lenses while welding.

WARNING

FUMES AND GASES can be hazardous to your health.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breath the fumes.

2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for metals, consumables, coatings, and cleaners.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.
6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapours to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

WARNING

WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 10.7 m (35 ft) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from travelling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.

WARNING

FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.

WARNING

CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.
3. Keep cylinders away from any welding or other electrical circuits.
4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

Recommended Protective Filters for Electric Welding		
Description of Process	Approximate range of Welding Current in Amps	Minimum Shade Number of Filter(s)
Manual Metal Arc Welding covered electrodes (MMAW)	Less than or equal to 100	8
	100 to 200	10
	200 to 300	11
	300 to 400	12
	Greater than 400	13
Gas Metal Arc Welding (GWAW) (MIG) other than Aluminium and Stainless Steel	Less than or equal to 150	10
	150 to 250	11
	250 to 300	12
	300 to 400	13
	Greater than 400	14
Gas Metal Arc Welding (GMAW) (MIG) Aluminium and Stainless Steel	Less than or equal to 250	12
	250 to 350	13
Gas Tungsten Arc Welding (GTAW) (TIG)	Less than or equal to 100	10
	100 to 200	11
	200 to 250	12
	250 to 350	13
	Greater than 350	14
Flux-cored Arc Welding (FCAW) -with or without shielding gas.	Less than or equal to 300	11
	300 to 400	12
	400 to 500	13
	Greater than 500	14
Air – Arc Gouging	Less than or equal to 400	12
Plasma-Arc Cutting	50 to 100	10
	100 to 400	12
	400 to 800	14
Plasma-Arc Spraying	—	15
Plasma-Arc Welding	Less than or equal to 20	8
	20 to 100	10
	100 to 400	12
	400 to 800	14
Submerged Arc Welding	—	2(5)
Resistance Welding	—	Safety Spectacles or eye shield

Refer to standard AS/NZS 1338.1:1992 for comprehensive information regarding the above table.

Table 1-1

WARNING

MOVING PARTS can cause injury.

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

WARNING

This product, when used for welding or cutting, produces fumes or gases which contain chemicals know to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety code Sec. 25249.5 et seq.)

NOTE

Considerations About Welding And The Effects of Low Frequency Electric and Magnetic Fields

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, Biological Effects of Power Frequency Electric & Magnetic Fields - Background Paper, OTA-BP-E-63 (Washington, DC: U.S. Government Printing Office, May 1989): "...there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields and interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks."

To reduce magnetic fields in the workplace, use the following procedures.

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cable around the body.
4. Keep welding power source and cables as far away from body as practical.

ABOUT PACEMAKERS:

The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

1.02 Principal Safety Standards

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safety in welding and allied processes Part 1: Fire Precautions. AS 1674.1- 1997 from SAI Global Limited, www.saiglobal.com.

Safety in welding and allied processes Part 2: Electrical, AS 1674.2-2007 from SAI Global Limited, www.saiglobal.com.

Filter for eye protectors - Filters for protection against radiation generated in welding and allied operations AN/NZS 1338.1:1992 from SAI Global Limited, www.saiglobal.com.

1.03 Declaration of Conformity

Manufacturer: CIGWELD
Address: 71 Gower St, Preston
Victoria 3072

Australia

Description of equipment: Welding Equipment (GMAW). WeldSkill 250, 350 MIG Power Source, Wirefeeder and associated accessories.

Serial numbers are unique with each individual piece of equipment and details description, parts used to manufacture a unit and date of manufacture.

The equipment conforms to all applicable aspects and regulations of the 'Low Voltage Directive' (Directive 73/23/EU, as recently changed in Directive 93/68/EU and to the National legislation for the enforcement of the Directive.

National Standard and Technical Specifications

The product is designed and manufactured to a number of standards and technical requirements among them are:

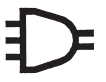
- IEC 60974-10 applicable to Industrial Equipment - generic emissions and regulations.
- AS 1674 Safety in welding and allied processes.
- AS 60974.1 / IEC 60974-1 applicable to welding equipment and associated accessories.

Extensive product design verification is conducted at the manufacturing facility as part of the routine design and manufacturing process, to ensure the product is safe and performs as specified. Rigorous testing is incorporated into the manufacturing process to ensure the manufactured product meets or exceeds all design specifications.

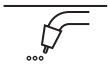
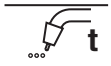
CIGWELD has been manufacturing and merchandising an extensive equipment range with superior performance, ultra safe operation and world class quality for more than 30 years and will continue to achieve excellence.

1.04 Symbol Chart

Note that only some of these symbols will appear on your model.

	On
	Off
	Dangerous Voltage
	Increase/Decrease
	Circuit Breaker
	AC Auxiliary Power
	Fuse
A	Amperage
V	Voltage
Hz	Hertz (cycles/sec)
f	Frequency
—	Negative
+	Positive
⎓	Direct Current (DC)
	Protective Earth (Ground)
	Line
	Line Connection
	Auxiliary Power
115V 15A ~	Receptacle Rating- Auxiliary Power

1 ~	Single Phase
3 ~	Three Phase
	Three Phase Static Frequency Converter-Transformer-Rectifier
	Remote
X	Duty Cycle
%	Percentage
	Panel/Local
	Shielded Metal Arc Welding (SMAW)
	Gas Metal Arc Welding (GMAW)
	Gas Tungsten Arc Welding (GTAW)
	Air Carbon Arc Cutting (CAC-A)
	Constant Current
	Constant Voltage Or Constant Potential
	High Temperature
	Fault Indication
	Arc Force
	Touch Start (GTAW)
	Variable Inductance
	Voltage Input

	Wire Feed Function
	Wire Feed Towards Workpiece With Output Voltage Off.
	Welding Gun
	Purging Of Gas
	Continuous Weld Mode
	Spot Weld Mode
	Spot Time
	Preflow Time
	Postflow Time
	2 Step Trigger Operation Press to initiate wirefeed and welding, release to stop.
	4 Step Trigger Operation Press and hold for preflow, release to start arc. Press to stop arc, and hold for preflow.
	Burnback Time
	Disturbance In Ground System
IPM	Inches Per Minute
MPM	Meters Per Minute

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1.05 Servicing Hazards

WARNING

The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard.

Only qualified persons should test, maintain, and repair this unit.

Only qualified persons should test, maintain, and repair this unit.

WARNING

ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Turn Off welding power source and wire feeder and disconnect and lockout input power using line disconnect switch, circuit breakers, or by removing plug from receptacle, or stop engine before servicing unless the procedure specifically requires an energized unit.
- Insulate yourself from ground by standing or working on dry insulating mats big enough to prevent contact with the ground.
- Do not leave live unit unattended.
- If this procedure requires and energized unit, have only personnel familiar with and following standard safety practices do the job.
- When testing a live unit, use the one-hand method. Do not put both hands inside unit. Keep one hand free.
- Disconnect input power conductors from de-energized supply line BEFORE moving a welding power source.

  SIGNIFICANT DC VOLTAGE exists after removal of input power on inverters.
- Turn Off inverters, disconnect input power, and discharge input capacitors according to instructions in Troubleshooting Section before touching any parts.

WARNING

STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.

WARNING

FIRE OR EXPLOSION hazard.

- Do not place unit on, over, or near combustible surfaces.
- Do not service unit near flammables.

WARNING

FLYING METAL or DIRT can injure eyes.

- Wear safety glasses with side shields or face shield during servicing.
- Be careful not to short metal tools, parts, or wires together during testing and servicing.

WARNING

HOT PARTS can cause sever burns.

- Do not touch hot parts bare handed.
- Allow cooling period before working on equipment.
- To handle not parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

WARNING

EXPLODING PARTS can cause injury.

- Failed parts can explode or cause other parts to explode when power is applied to inverters.
- Always wear a face shield and long sleeves when servicing inverters.

WARNING

SHOCK HAZARD from testing.

- Turn Off welding power source and wire feeder or stop engine before making or changing meter lead connections.
- Use at least one meter lead that has a self-retaining spring clip such as an alligator clip.
- Read instructions for test equipment.

WARNING

FALLING UNIT can cause injury.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.

WARNING

MOVING PARTS can cause injury,

- Keep away from moving parts such as fans.
- Keep away from pinch points such as drive rolls.
- Have only qualified persons remove doors, panels, covers, or guards for maintenance as necessary.
- Keep hands, hair, loose clothing, and tools away from moving parts.

- Reinstall doors, panels, covers, or guards when maintenance is finished and before reconnecting input power.

WARNING

MAGNETIC FIELDS can affect Implanted Medical Devices.

- Wearers of Pacemakers and other Implanted Medical Devices should keep away from servicing areas until consulting their doctor and the device manufacturer.

WARNING

OVERUSE can cause OVERHEATING.

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block or filter airflow to unit.

WARNING

H.F. RADIATION can cause interference.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment install, test, and service H.F. producing units.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.

WARNING

READ INSTRUCTIONS.

- Use Testing Booklet (Part No. 150 853) when servicing this unit.
- Consult the Owner's Manual for welding safety precautions.
- Use only genuine replacement parts from the manufacturer.

1.06 EMF Information

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

Welding current, as it flows through welding cables, will cause electromagnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: "The body of evidence, in the committee's judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard." However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Implanted Medical Devices:

Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2: INTRODUCTION

2.01 How to Use This Manual

This Manual usually applies to the part numbers listed on page i. To ensure safe operation, read the entire manual, including the chapter on safety instructions and warnings. Throughout this manual, the word WARNING, CAUTION and NOTE may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

WARNING

Gives information regarding possible personal injury. Warnings will be enclosed in a box such as this.

CAUTION

Refers to possible equipment damage. Cautions will be shown in bold type.

NOTE

Offers helpful information concerning certain operating procedures. Notes will be shown in italics

You will also notice icons from the safety section appearing throughout the manual. These are to advise you of specific types of hazards or cautions related to the portion of information that follows. Some may have multiple hazards that apply and would look something like this:

2.02 Equipment Identification

The unit's identification number (specification or part number), model, and serial number usually appear on a nameplate attached to the machine. Equipment which does not have a nameplate attached to the machine is identified only by the specification or part number printed on the shipping container. Record these numbers for future reference.

2.03 Receipt of Equipment

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to the location in your area listed in the inside back cover of this manual. Include all equipment identification numbers as described above along with a full description of the parts in error.

2.04 Description

The WeldSkill 250 and 350 MIG Power Sources are Gas Metal Arc Welders (GMAW – commonly known as MIG) with integrated wire feeder units. The Power Sources are designed to meet the broad operating needs of the modern user and meet the requirements of Australian Standard AS 60974.1 and International Standard IEC 60974-1.

The WeldSkill 250 and 350 MIG Power Sources provide excellent performance on mild steel, stainless steel, aluminium, silicon bronze and some hard facing wires with Argon based shielding gases. These Power Sources also provide excellent results on mild steel using Carbon Dioxide shielding gas.

The WeldSkill 250 and 350 MIG Power Sources are supplied as complete packages that are ready to weld (not including shielding gas, electrode wire and Hiderok™ welding helmet). The units can also be fitted with an optional remote wirefeeder which provides portability when welding in positions with limited access. The instructions in this manual detail how to correctly set up these machines and provide guidelines on gaining the best production efficiency from the power source. Please read this manual thoroughly before using your welder.

2.05 Transportation Methods

Disconnect input power conductors from de-energized supply line before moving the welding power source.

Lift unit with handle on top of case. Use handcart or similar device of adequate capacity. If using a fork lift vehicle, secure the unit on a proper skid before transporting.

2.06 User Responsibility

This equipment will perform as per the information contained herein when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Defective equipment (including welding leads) should not be used. Parts that are broken, missing, plainly worn, distorted or contaminated, should be replaced immediately. Should such repairs or replacements become necessary, it is recommended that such repairs be carried out by appropriately qualified persons approved by CIGWELD. Advice in this regard can be obtained by contacting accredited CIGWELD Distributor.

This equipment or any of its parts should not be altered from standard specification without prior written approval of CIGWELD. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use or unauthorised modification from standard specification, faulty maintenance, damage or improper repair by anyone other than appropriately qualified persons approved by CIGWELD.

2.07 Packaged Items

WeldSkill 250 MIG Plant (Part No: W1004500)
(South Pacific Version)

- WeldSkill 250 MIG Power Source (compact)
- Tweco WeldSkill Fabgun 250 MIG Torch
- Work lead
- WeldSkill Argon Regulator/Flowmeter
- Cylinder Chain
- 200mm Spool Adaptor
- Feed rolls: 0.6/0.8mm V Groove;
  0.9/1.2mm V Groove (fitted),
  1.0/1.2mm U Groove;
  0.8/0.9mm V Knurled, 1.2/1.6mm V Knurled.
- Contact tips: 0.6mm; 0.8mm, 0.9mm (fitted);1.0mm, 1.2mm, 1.6mm
- Shielding Gas Hose Assembly
- Operating Manual

WeldSkill 350 MIG Plant (Part No: W1004600)
(South Pacific Version)

- WeldSkill 350 MIG Power Source (compact)
- Tweco WeldSkill Fabgun 400 MIG Torch
- Work lead
- WeldSkill Argon Regulator/Flowmeter
- Cylinder Chain
- 200mm Spool Adaptor
- Feed rolls: 0.6/0.8mm V Groove;
  0.9/1.2mm V Groove (fitted),
  1.0/1.2mm U Groove;
  1.2/1.6mm U Groove, 0.8/0.9mm V Knurled,
  1.2/1.6mm V Knurled.
- Contact tips: 0.6mm; 0.8mm, 0.9mm (fitted); 1.0mm, 1.2mm, 1.6mm
- Shielding Gas Hose Assembly
- Operating Manual

WeldSkill 250 MIG Plant (Part No: W1003400)
(Asia Version)

- WeldSkill 250 MIG Power Source (compact)
- Mig Torch MB 26 style
- Work lead
- Cylinder Chain
- 200mm Spool Adaptor
- Feed rolls: 0.6/0.8mm V Groove;
  0.9/1.2mm V Groove (fitted),
  1.0/1.2mm U Groove;
  0.8/0.9mm V Knurled, 1.2/1.6mm V Knurled.
- Contact tips: 0.6mm; 0.8mm, 0.9mm (fitted);1.0mm, 1.2mm, 1.6mm
- Shielding Gas Hose Assembly
- Shielding Gas Adaptor
- Operating Manual

WeldSkill 350 MIG Plant (Part No: W1003500)
(Asia Version)

- WeldSkill 350 MIG Power Source (compact)
- MIG Torch MB 36 style
- Work lead
- Cylinder Chain
- 200mm Spool Adaptor
- Feed rolls: 0.6/0.8mm V Groove;
  0.9/1.2mm V Groove (fitted),
  1.0/1.2mm U Groove;
  1.2/1.6mm U Groove, 0.8/0.9mm V Knurled,
  1.2/1.6mm V Knurled.
- Contact tips: 0.6mm; 0.8mm, 0.9mm (fitted);1.0mm, 1.2mm, 1.6mm
- Shielding Gas Hose Assembly
- Shielding Gas Adaptor
- Operating Manual

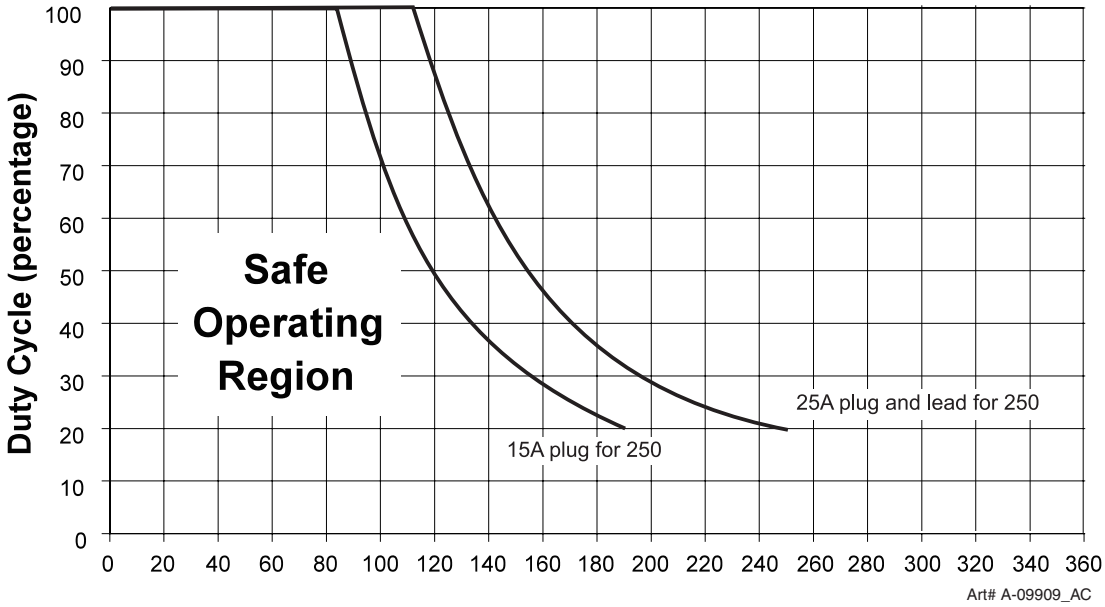
WeldSkill 4R Wirefeeder Plant (Part No: W3000401)
(All Regions)

- WeldSkill 4R Wirefeeder
- 8m Interconnection Lead (fitted)
- 200mm Spool Adaptor
- Shielding Gas Adaptor
- Operating Manual

Notes

SECTION 3:
SAFETY AND INSTALLATION

3.01 Duty Cycle



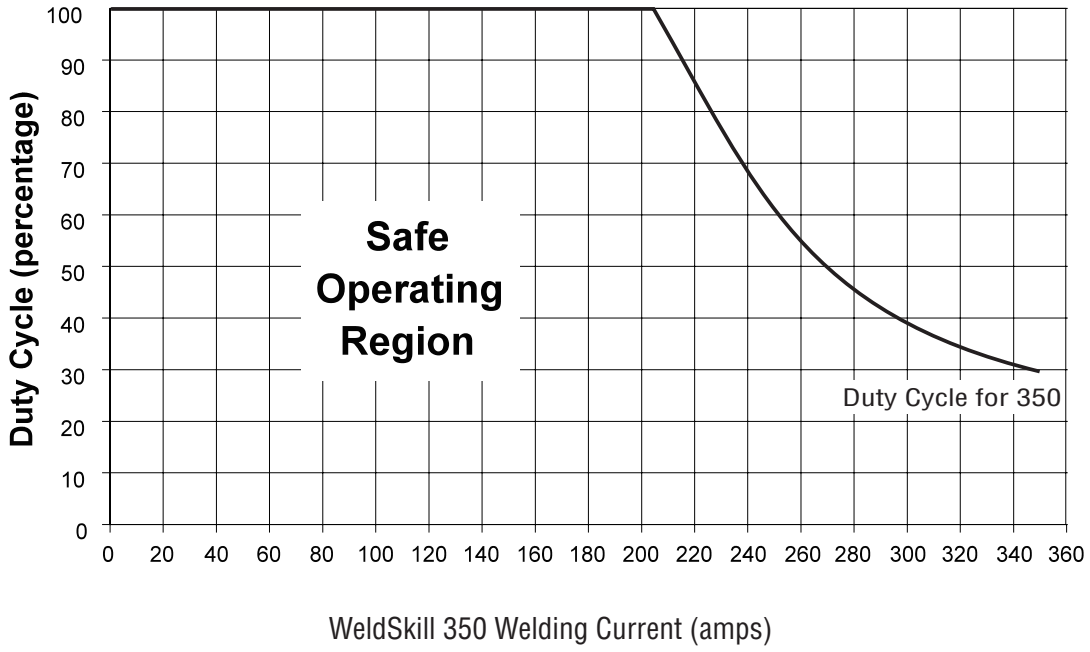


Figure 3-1: Weldskill 250 & 350 Duty Cycle

The rated duty cycle of a Welding Power Source, is a statement of the time it may be operated at its rated welding current output without exceeding the temperature limits of the insulation of the component parts. To explain the 10 minute duty cycle period the following example is used. Suppose a Welding Power Source is designed to operate at a 30% duty cycle, 350 amperes at 31.5 volts. This means that it has been designed and built to provide the rated amperage (350A) for 3 minutes, i.e. arc welding time, out of every 10 minute period (30% of 10 minutes is 3 minutes). During the other 7 minutes of the 10 minute period the Welding Power Source must idle and be allowed to cool. The thermal cutout will operate if the duty cycle is exceeded.

3.02 WeldSkill 250 MIG Power Source Specifications

Description	WeldSkill 250 MIG	
Plant Part Numbers	W1003400 & W1004500	
Plant Dimensions	H 1050mm x W 470mm x D 1020mm	
Power Source Mass	100kg	
Cooling	Fan Cooled	
Energy Input (Refer NOTE below)	This Column applies to the Factory Fitted 2.5mm^2 (20A) Primary Lead with 15A Supply Plug	This Column applies to a 4.0mm^2 (25A) Primary Lead with a 25A Supply Plug.
Input Cable Requirements	Factory Fitted	4.0mm^2 2 core + earth heavy duty R90 insulation type
Nominal Supply Voltage	240VAC ± 10%	240VAC ± 10%
Number of Phases	1	1
Nominal Supply Frequency	50Hz	50Hz
Effective Input Current (I_{1eff})	♥15 Amps	♥24 Amps
Maximum Input Current (I_{1max})	33 Amps	54 Amps
Single Phase Generator Requirement	♣ 8kVA	♣13kVA
Welding Current Range	50 – 190A	50 – 270A
Open Circuit Voltage Range	22 to 46 V	22 to 46 V
MIG (GMAW) Welding Output, 40°C, 10 min.	190A @ 20%, 23.5V 110A @ 60%, 19.5V 85A @ 100%, 18.3V	250A @ 20%, 26.5V 144A @ 60%, 21.2V 112A @ 100%, 19.6V
Operating Temperature Range	0° C - 40° C	0° C - 40° C
Number of Output Voltage Switch Settings	12	
Protection Class	IP21S	

Table 3-1 WeldSkill 250 Specification

♥ The Effective Input Current should be used for the determination of cable size & supply requirements.

Motor start fuses or thermal circuit breakers are recommended for this application. Check local requirements for your situation in this regard.

♣ Generator Requirements at the Maximum Output Duty Cycle.

Reduced output ratings apply with the supplied 15A primary lead. To achieve the maximum rated output & duty cycle ratings the 20A primary lead must be replaced with a larger primary lead as specified in section 3.04. This must be carried out be a qualified electrical tradesperson.

NOTE

Due to variations that can occur in manufactured products, claimed performance, voltages, ratings, all capacities, measurements, dimensions and weights quoted are approximate only. Achievable capacities and ratings in use and operation will depend upon correct installation, use, applications, maintenance and service.

3.03 WeldSkill 350 MIG Power Source Specifications

Description	WeldSkill 350 MIG
Plant Part Numbers	W1003500 & W1004600
Plant Dimensions	H 1050mm x W 470mm x D 1020mm
Power Source Mass	112kg
Cooling	Fan Cooled
Input Cable Requirements	1.5mm^2 + 3 core & earth heavy duty R90 insulation type
Nominal Supply Voltage	415VAC $\pm$ 10%
Number of Phases	3
Nominal Supply Frequency	50Hz
Effective Input Current (I_{1eff})	♥14 Amps
Maximum Input Current (I_{1max})	25 Amps
Three Phase Generator Requirement	♣18kVA
Welding Current Range	35 – 380A
Open Circuit Voltage Range	17 to 42 V
MIG (GMAW) Welding Output, 40ºC, 10 min.	350A @ 30%, 31.6V 250A @ 60%, 26.3V 205A @ 100%, 24.4V
Operating Temperature Range	0° C - 40° C
Number of Output Voltage Switch Settings	24
Protection Class	IP21S

Table 3-2 WeldSkill 350 Specification

♥ The Effective Input Current should be used for the determination of cable size & supply requirements.

Motor start fuses or thermal circuit breakers are recommended for this application. Check local requirements for your situation in this regard.

♣ Generator Requirements at the Maximum Output Duty Cycle.

NOTE

Due to variations that can occur in manufactured products, claimed performance, voltages, ratings, all capacities, measurements, dimensions and weights quoted are approximate only. Achievable capacities and ratings in use and operation will depend upon correct installation, use, applications, maintenance and service.

3.04 WeldSkill 4R Wirefeeder Specifications

Description	WeldSkill 4R Wirefeeder
Wirefeeder Plant Part Number	W3000401
Wirefeeder Plant Dimensions	H 490mm x W 420mm x D 670mm
Wirefeeder Plant Mass	25kg
Wire Feed Motor Voltage	24VDC
Gas Solenoid Voltage	36VAC
Minimum Wire Speed	2 m/min
Maximum Wire Speed	22 m/min
Operating Temperature Range	0°C - 40°C
Interconnection Plug	12 pin
Interconnection Length	8 metre

Table 3-3 WeldSkill 4R Wirefeeder Specification

3.05 Environment

These units are designed for use in environments with increased hazard of electric shock.

A. Examples of environments with increased hazard of electric shock are:

1. In locations in which freedom of movement is restricted, so that the operator is forced to perform the work in a cramped (kneeling, sitting or lying) position with physical contact with conductive parts.
2. In locations which are fully or partially limited by conductive elements, and in which there is a high risk of unavoidable or accidental contact by the operator.
3. In wet or damp hot locations where humidity or perspiration considerable reduces the skin resistance of the human body and the insulation properties of accessories.

B. Environments with increased hazard of electric shock do not include places where electrically conductive parts in the near vicinity of the operator, which can cause increased hazard, have been insulated.

3.06 Location

Be sure to locate the welder according to the following guidelines:

- In areas, free from moisture and dust.
- Ambient temperature between 14°F (-10°C) to 104° F (40° C).
- In areas, free from oil, steam and corrosive gases.
- In areas, not subjected to abnormal vibration or shock.
- In areas, not exposed to direct sunlight or rain.
- Place at a distance of 12” (300mm) or more from walls or similar that could restrict natural air flow for cooling
- The enclosure design of this power source meets the requirements of IP21S as outlined in AS 60529. This provides adequate protection against solid objects (greater than 12mm), and direct protection from vertical drops. Under no circumstances should the unit be operated or connected in a micro environment that will exceed the stated conditions. For further information please refer to AS 60529.
- Precautions must be taken against the power source toppling over. The power source must be located on a suitable horizontal surface in the upright position when in use.

WARNING

Thermal Arc advises that this equipment be electrically connected by a qualified electrician.

3.07 Ventilation

Since the inhalation of welding fumes can be harmful, ensure that the welding area is effectively ventilated.

3.08 Mains Supply Voltage Requirements

The Mains supply voltage should be within ± 15% of the rated mains supply voltage. Too low a voltage may cause poor welding performance. Too high a supply voltage will cause components to overheat and possibly fail.

The Welding Power Source must be:

- Correctly installed, if necessary, by a qualified electrician.
- Correctly earthed (electrically) in accordance with local regulations.
- Connected to the correct size power point and fuse as per the Specifications on page 3-2, 3-3 and 3-4.

The WeldSkill 250 MIG Power Source is supplied with a 20 Amp input lead and is designed for a 240 VAC supply voltage.

The following Mains Current Circuit recommendations are required to obtain the maximum welding current and duty cycle from these welding products:

Mains Supply Voltage Setting	Mains Supply Lead Size	Minimum Mains Current Circuit Size	Machines Duty Cycle
240V	2.5 mm^2	15 Amp	220 A @ 20%
240V	4 mm^2	25 Amp	250 A @ 25%

Table 3-4 WeldSkill 250 Supply Requirements

NOTE

Motor start fuses or thermal circuit breakers are recommended for this application. Check local requirements for your situation in this regard.

The WeldSkill 350 MIG Power Source is supplied with a 15 Amp input lead and is designed for a 415 VAC supply voltage.

The WeldSkill 350 MIG Power Source is suitable for below Mains supply voltages:

Mains Supply Voltage Setting	Mains Supply Lead Size	Minimum Mains Current Circuit Size	Machines Duty Cycle
415V	1.5 mm^2	15 Amp	350A @ 30%

Table 3-5 WeldSkill 350 Supply Requirements

NOTE

Motor start fuses or thermal circuit breakers are recommended for this application. Check local requirements for your situation in this regard.

WARNING

Any electrical work must be carried out by a qualified Electrical Tradesperson.

3.09 Electrical Input Connections

WARNING

ELECTRIC SHOCK can kill; SIGNIFICANT DC VOLTAGE is present after removal of input power.

DO NOT TOUCH live electrical parts.

SHUT DOWN welding power source, disconnect input power employing lockout/tagging procedures. Lock-out/tagging procedures consist of padlocking line disconnect switch in open position, removing fuses from fuse box, or shutting off and red-tagging circuit breaker or other disconnecting device.

• Electrical Input Requirements

Operate the welding power source from a single-phase 50/60 Hz, AC power supply. The input voltage must match one of the electrical input voltages shown on the input data label on the unit nameplate. Contact the local electric utility for information about the type of electrical service available, how proper connections should be made, and inspection required. The line disconnect switch provides a safe and convenient means to completely remove all electrical power from the welding power supply whenever necessary to inspect or service the unit.

Do not connect an input (WHITE or BLACK) conductor to the ground terminal.

Do not connect the ground (GREEN) conductor to an input line terminal.

1. Connection end of ground (GREEN or GREEN/YELLOW) conductor to a suitable ground. Use a grounding method that complies with all applicable electrical codes.
2. Connect ends of active (BROWN) and Neutral (BLUE) input conductors to a suitable power supply system that complies with all appliance local electrical codes.

Input Power

Each unit incorporates an INRUSH circuit. When the MAIN CIRCUIT SWITCH is turned on, the inrush circuit provides pre-charging for the input capacitors. A relay in the Main Power PCB1 will turn on after the input capacitors have charged to operating voltage (after approximately 5 seconds).

3.10 Electromagnetic Compatibility

WARNING

Extra precautions for Electromagnetic Compatibility may be required when this Welding Power Source is used in a domestic situation.

3.11 Installation and Users Responsibility

The user is responsible for installing and using the welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the user of the welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing the welding circuit, see NOTE below. In other cases it could involve constructing an electromagnetic screen enclosing the Welding Power Source and the work, complete with associated input filters. In all cases, electromagnetic disturbances shall be reduced to the point where they are no longer Trouble-some.

NOTE

The welding circuit may or may not be earthed for safety reasons. Changing the earthing arrangements should only be authorised by a person who is competent to assess whether the changes will increase the risk of injury, e.g. by allowing parallel welding current return paths which may damage the earth circuits of other equipment. Further guidance is given in IEC 974-13 Arc Welding Equipment - Installation and use (under preparation).

3.12 Assessment of Area

Before installing welding equipment, the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account.

1. Other supply cables, control cables, signaling and telephone cables; above, below and adjacent to the welding equipment.
2. Radio and television transmitters and receivers.
3. Computer and other control equipment.
4. Safety critical equipment, e.g. guarding of industrial equipment.
5. The health of people around, e.g. the use of pace-makers and hearing aids.
6. Equipment used for calibration and measurement.
7. The time of day that welding or other activities are to be carried out.
8. The immunity of other equipment in the environment: the user shall ensure that other equipment being used in the environment is compatible: this may require additional protection measures.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

3.13 Methods of Reducing Electromagnetic Emissions

1. Mains Supply

   Welding equipment should be connected to the mains supply according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply. Consideration should be given to shielding the supply cable of permanently installed welding equipment in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the Welding Power Source so that good electrical contact is maintained between the conduit and the Welding Power Source enclosure.

2. Maintenance of Welding Equipment

   The welding equipment should be routinely maintained according to the manufacturer's recommendations. All access and service doors and covers should be closed and properly fastened when the welding equipment is in operation. The welding equipment should not be modified in any way except for those changes and adjustments covered in the manufacturer's instructions. In particular, the spark gaps of arc striking and stabilizing devices should be adjusted and maintained according to the manufacturer's recommendation

3. Welding Cables

   The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

4. Equipotential Bonding

   Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, metallic components bonded to the work piece will increase the risk that the operator could receive a shock by touching the metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

5. Earthing of the Work Piece

   Where the work piece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, e.g. ship's hull or building steelwork, a connection bonding the work piece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the work piece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the work piece to earth should be made by direct connection to the work piece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

6. Screening and Shielding

   Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening the entire welding installation may be considered for special applications.

3.14 Volt-Ampere Curves

Voltage-Amperage Curves shows maximum voltage and amperage output capabilities of welding power source. Curves of other settings fall between curves shown.

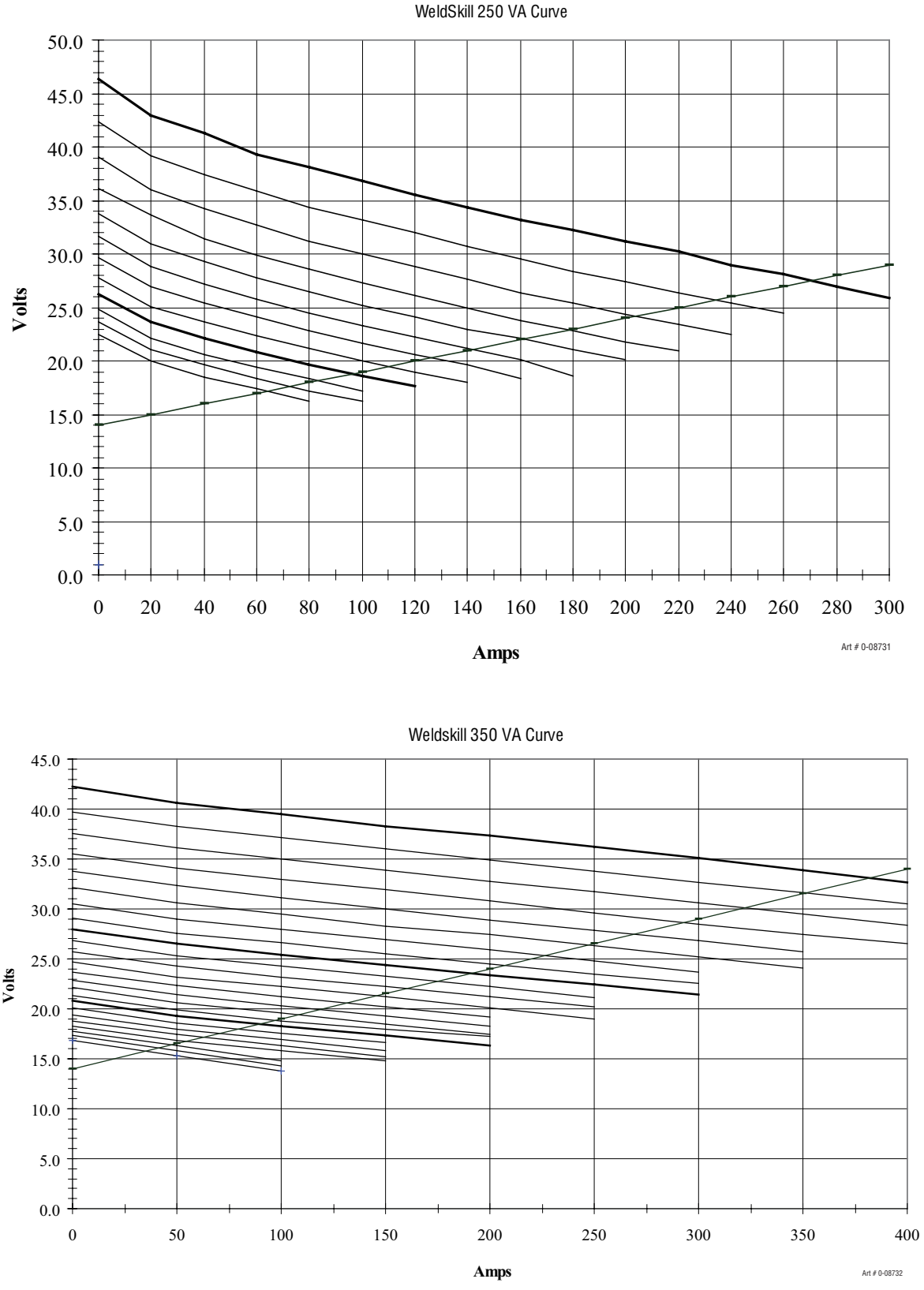


Figure 3-2: Fabricator 181i Volt-Ampere Curves

Notes

SECTION 4: OPERATION

4.01 Power Source Front Panel

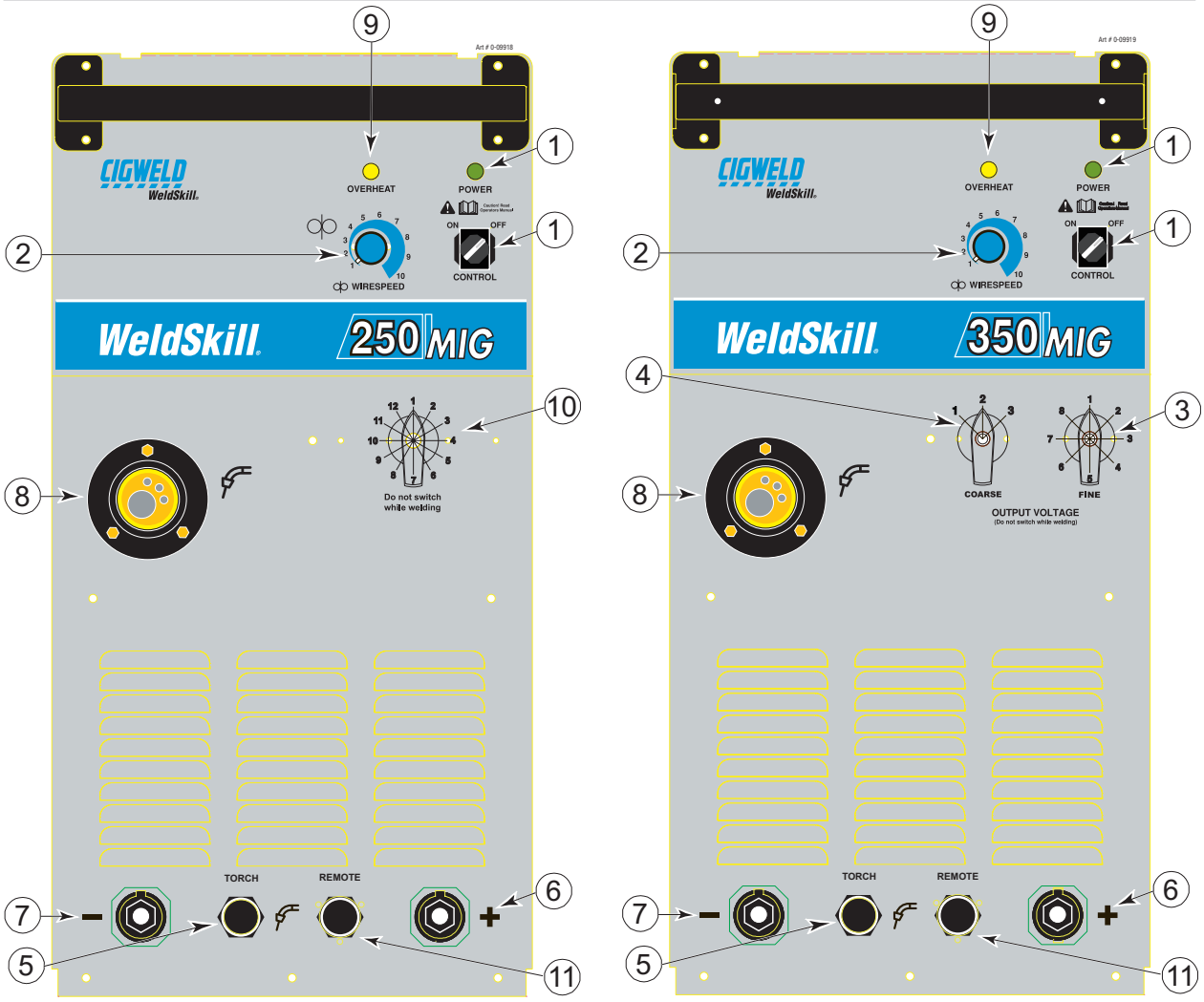


Figure 4-1 WeldSkill 250 & 350 MIG Front Panel

1. POWER ON INDICATOR/MAIN POWER CONTROL SWITCH

The Power ON Indicator illuminates when the Main Power Control Switch ON/OFF knob is in the ON position and the correct mains voltage is present.

WARNING

When the light is lit, the machine is connected to the Mains supply voltage and the internal electrical components are at Mains voltage potential.

2. WIRESPEED CONTROL

The Wirespeed Control knob controls the welding current via the electrode wirefeed rate. ie the speed of the wirefeed motor.

3. VOLTAGE CONTROL SWITCH - FINE (WELDSKILL 350 ONLY)

The Fine Voltage Control switch increases the welding voltage (in smaller increments than the Coarse switch) as it is rotated in a clockwise direction.

CAUTION

The Coarse & Fine Voltage Control switches MUST NOT BE SWITCHED during the welding process.

4. VOLTAGE CONTROL SWITCH - COARSE (WELDSKILL 350 ONLY)

The Coarse Voltage Control increases the welding voltage (in larger increments than the Fine switch) as it is rotated in a clockwise direction.

CAUTION

The Coarse & Fine Voltage Control switches MUST NOT BE SWITCHED during the welding process.

5. TORCH POLARITY LEAD

This lead selects the welding voltage polarity of the electrode wire. Plug it into the positive welding terminal (+) when using steel, stainless steel or aluminium electrode wire. Plug the Torch Polarity Lead into the negative welding terminal (-) when using gasless electrode wire. If in doubt, consult the manufacturer of the electrode wire for the correct polarity.

6. POSITIVE WELDING TERMINAL

Positive Welding Terminal. Welding current flows from the Power Source via heavy duty bayonet type terminals. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

7. NEGATIVE WELDING TERMINAL

Negative Welding Terminal. Welding current flows from the Power Source via heavy duty bayonet type terminals. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

CAUTION

Loose welding terminal connections can cause overheating and result in the male plug being fused in the terminal.

8. MIG TORCH ADAPTOR (Euro Style)

The MIG torch adaptor is the connection point for the MIG welding torch. Connect the torch by pushing the torch connector into the brass torch adaptor firmly and screwing the plastic torch nut clockwise to secure in position. To remove the MIG Torch simply reverse these directions.

9. OVERHEAT INDICATOR

This welding power source is protected by a self resetting thermostat. The overheat indicator will illuminate if the duty cycle of the power source has been exceeded. Should the overheat indicator illuminate the output of the power source will be disabled. Once the power source cools down this indicator will go OFF and the overheat condition will automatically reset. Note that the mains power switch should remain in the on position such that the fan continues to operate thus allowing the unit to cool sufficiently. Do not switch the unit off should a overheat condition be present.

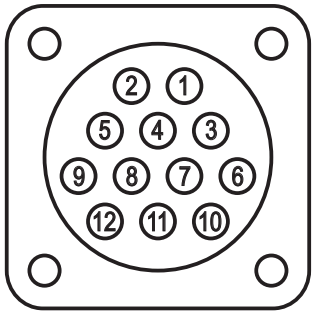
10. VOLTAGE CONTROL SWITCH (WELDSKILL 250 ONLY)

The Voltage Control Switch is a 12 position that increases the welding voltage as it is rotated in a clockwise direction.

CAUTION

The Voltage Control switch MUST NOT BE SWITCHED during the welding process.

11. REMOTE SOCKET



POWER SOURCE 12 PIN REMOTE SOCKET

Art # A-09921_AB

12 PIN	
1	trigger
2	Motor Positive (24VDC)
3	Motor Negative
4	CW of remote wirespeed pot
5	ACW of remote wirespeed pot
6	wiper of 5k remote wirespeed pot
7	trigger
8	solenoid
9	solenoid
10	no connection
11	no connection
12	no connection

Figure 4-2 WeldSkill 250 & 350 MIG Remote Socket

CAUTION

The Voltage Control Switch must not be switched whilst welding.

4.02 Power Source Internal Welding Controls

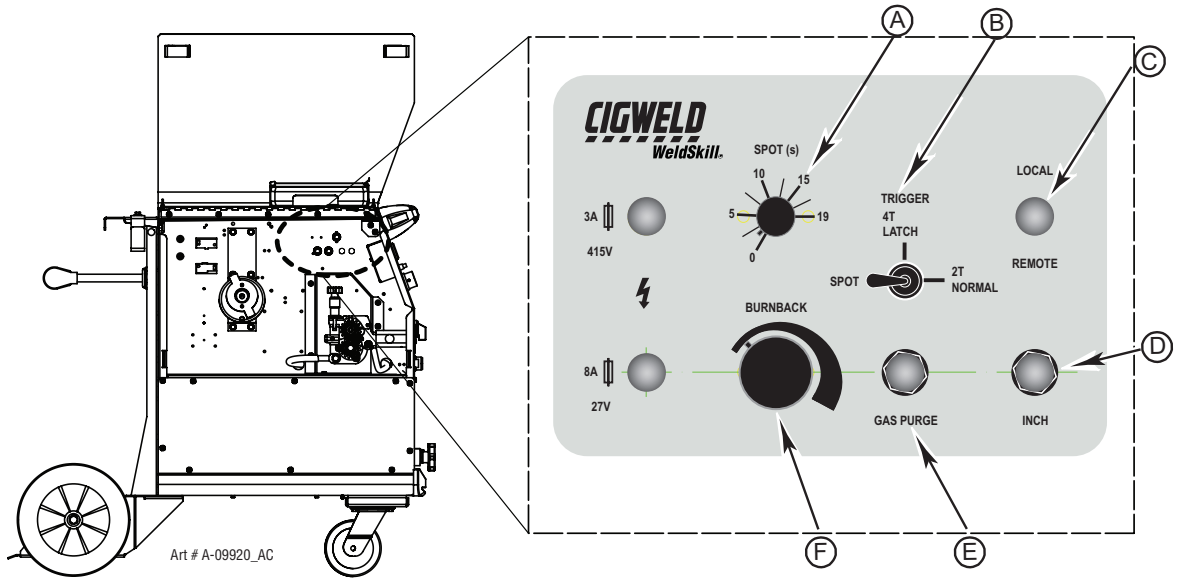
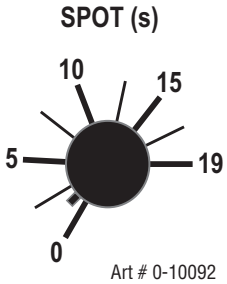


Figure 4-3 Internal welding controls

A. SPOT TIME



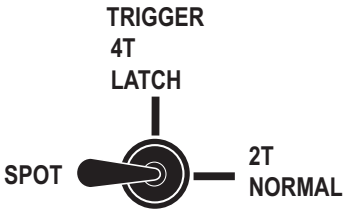
Art # 0-10092

When the TRIGGER MODE SELECTOR switch is switched to the SPOT position, the SPOT TIME control adjusts the duration of a single spot weld.

B. TRIGGER MODE SWITCH

The Trigger Mode Selector switch selects the desired welding mode.

Art # A-09922



Mode	Functional Description
NORMAL (2T)	This mode of welding is used to weld two or more components together with a continuous weld. Pressing and holding the MIG torch trigger switch will activate the power source such that welding can commence. Releasing the MIG torch trigger switch will de-activate the power source.
SPOT	This mode of welding is used to produce short welding runs of a pre-set duration. This duration is set using the Spot Time Control (A). Pressing and holding the MIG torch trigger switch will activate the power source until such time as the desired Spot time has elapsed after which the power source will de-activate. The spot time period is set by the SPOT TIME control (A) located in the wiredrive compartment.
LATCH (4T)	This mode of welding is mainly used for long weld runs. The MIG torch trigger switch is depressed (and released) to activate the power source, and then depressed (and released) a second time to de-activate the power source. This obviates the need for the operator to depress the trigger for the complete length of the weld run.

Table 4-1 Trigger Mode Switch Functional Description

C. LOCAL/REMOTE MODE SWITCH

The Local/Remote switch is used to switch between local and Remote modes.

Local Mode

Set the switch in the Local position when using the power source only (With no optional external wirefeeder).

Remote Mode

Set the switch in the Remote position when using an optional remote wirefeeder. This will enable the wirefeeder and allow the wirespeed to be controlled from the remote wirefeeder wirespeed control. The other controls such as trigger mode, inch, gas purge, spot, burnback will still be controlled from the power source.

D. WIRE INCH SWITCH

INCH

Art # 0-10094

The Wire Inch Switch is used to feed the MIG wire through the MIG torch. When the push button switch is pressed down, the electrode wire is fed through the Wirefeed system & MIG torch. No gas flows and welding voltage is not present when the Wire Inch Switch is activated.

WARNING

Keep torch away from eyes and face.

E. GAS PURGE

GAS PURGE

Art # A-10095

The Gas Purge Switch is used to purge gas (or impurities such as air) out of the gas system. When the push button switch is pressed, the shielding gas flows through the Wirefeed system & out of the MIG torch nozzle. The Wirefeed motor does not operate and welding voltage is not present when the Gas Purge Switch is activated.

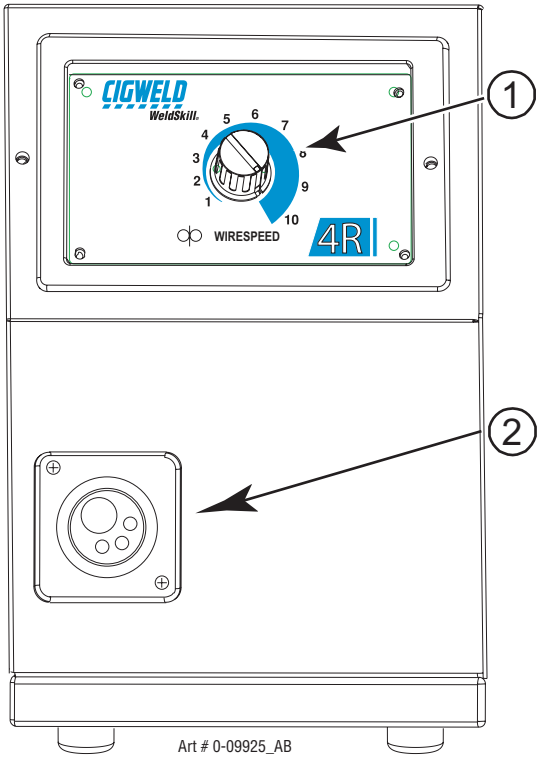
F. BURNBACK

BURNBACK

Art # A-10093

Burnback time is used to adjust the amount of MIG wire protruding from the MIG torch contact tip (stick out) after the completion of welding. Rotating the Burnback control in a clockwise direction increases the Burnback time. Rotating the Burnback control in an anticlockwise direction reduces the Burnback time.

4.03 4R Wirefeeder Front Panel



1. WIRESPEED CONTROL

The Wirespeed Control Knob controls the welding current via the electrode wirefeed rate, ie the speed of the wirefeed motor.

2. MIG TORCH ADAPTOR (Euro Style)

The MIG torch adaptor is the connection point for the MIG welding torch. Connect the torch by pushing the torch connector into the brass torch adaptor firmly and screwing the plastic torch nut clockwise to secure in position. To remove the MIG Torch simply reverse these directions.

4.04 Shielding Gas Regulator Operating Instructions

WARNING

This equipment is designed for use with welding grade (Inert) shielding gases only.

NOTE

WeldSkill Argon Regulator / Flowmeter is not included in Asia Versions Part Nos W1003400 and W1003500.

Shielding Gas Regulator Safety

This regulator is designed to reduce and control high pressure gas from a cylinder or pipeline to the working pressure required for the equipment using it.

If the equipment is improperly used, hazardous conditions are created that may cause accidents. It is the users responsibility to prevent such conditions. Before handing or using the equipment, understand and comply at all times with the safe practices prescribed in this instruction.

SPECIFIC PROCEDURES for the use of regulators are listed below.

1. NEVER subject the regulator to inlet pressure greater than its rated inlet pressure.

2. NEVER pressurize a regulator that has loose or damaged parts or is in a questionable condition. NEVER loosen a connection or attempt to remove any part of a regulator until the gas pressure has been relieved. Under pressure, gas can dangerously propel a loose part.
3. DO NOT remove the regulator from a cylinder without first closing the cylinder valve and releasing gas in the regulator high and low pressure chambers.
4. DO NOT use the regulator as a control valve. When downstream equipment is not in use for extended periods of time, shut off the gas at the cylinder valve and release the gas from the equipment.
5. OPEN the cylinder valve SLOWLY. Close after use.

User Responsibilities

This equipment will perform safely and reliable only when installed, operated and maintained, and repaired in accordance with the instructions provided. Equipment must be checked periodically and repaired, replaced, or reset as necessary for continued safe and reliable performance. Defective equipment should not be used. Parts that are broken, missing, obviously worn, distorted, or contaminated should be replaced immediately.

The user of this equipment will generally have the sole responsibility for any malfunction, which results from improper use, faulty maintenance, or by repair by anyone other than an accredited repairer.

CAUTION

Match regulator to cylinder. NEVER CONNECT a regulator designed for a particular gas or gases to a cylinder containing any other gas.

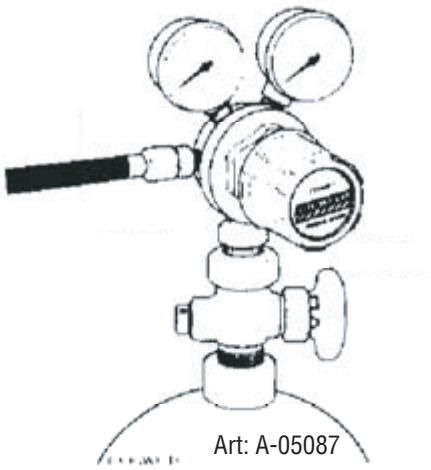


Figure 4-4 Fit Regulator to Cylinder

Installation

1. Remove cylinder valve plastic dust seal. Clean the cylinder valve outlet of impurities that may clog orifices and damage seats before connecting the regulator.

   Crack the valve (open then close) momentarily, pointing the outlet away from people and sources of ignition. Wipe with a clean lintless cloth.
2. Match regulator to cylinder. Before connecting, check that the regulator label and cylinder marking agree and that the regulator inlet and cylinder outlet match. NEVER CONNECT a regulator designed for a particular gas or gases to a cylinder containing any other gas.
3. Connect the regulator inlet connection to cylinder or pipeline and tighten it firmly but not excessively, with a suitable spanner.
4. Connect and tighten the outlet hose firmly and attach down-stream equipment.
5. To protect sensitive down-stream equipment a separate safety device may be necessary if the regulator is not fitted with a pressure relief device.

Operation

With the regulator connected to cylinder or pipeline, and the adjustment screw/knob fully disengaged, pressurize as follows:

1. Stand to one side of regulator and slowly open the cylinder valve. If opened quickly, a sudden pressure surge may damage internal regulator parts.
2. With valves on downstream equipment closed, adjust regulator to approximate working pressure. It is recommended that testing for leaks at the regulator connection points be carried out using a suitable leak detection solution or soapy water.
3. Purge air or other unwanted welding grade shielding gas from equipment connected to the regulator by individually opening then closing the equipment control valves. Complete purging may take up to ten seconds or more, depending upon the length and size of the hose being purged.

Adjusting Flow Rate

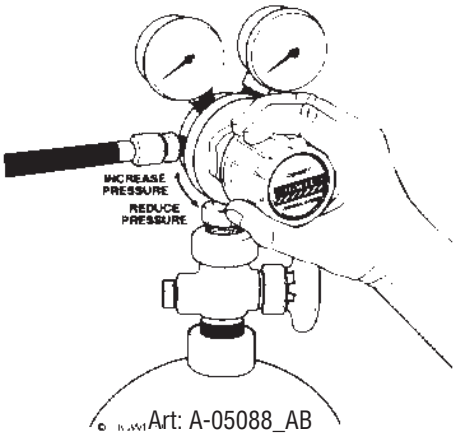


Figure 4-5 Adjust Flow Rate

With the regulator ready for operation, adjust working flow rate as follows:

1. Slowly turn adjusting screw/knob in (clockwise) direction until the outlet gauge indicates the required flow rate.

NOTE

It may be necessary to re-check the shielding gas regulator flow rate following the first weld sequence due to back pressure present within shielding gas hose assembly.

2. To reduce flow rate, allow the welding grade shielding gas to discharge from regulator by opening the downstream valve. Bleed welding grade shielding gas into a well ventilated area and away from any ignition source. Turn adjusting screw counterclockwise, until the required flow rate is indicated on the gauge. Close downstream valve.

Shutdown

Close cylinder valve whenever the regulator is not in use. To shut down for extended periods (more than 30 minutes).

1. Close cylinder or upstream valve tightly.
2. Open downstream equipment valves to drain the lines. Bleed gas into a well ventilated area and away from any ignition source.
3. After gas is drained completely, disengage adjusting screw and close downstream equipment valves.
4. Before transporting cylinders that are not secured on a cart designed for such purposes, remove regulators.

4.05 Setup For The WeldSkill 250 & 350 MIG Power Source

Power Source Connections

A. Remove all packaging materials.

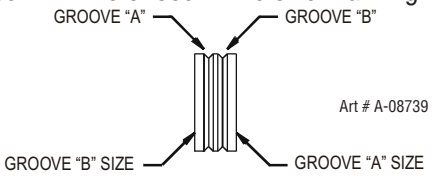
B. Connect the work lead to the negative welding terminal (-) [positive welding terminal (+) for flux cored electrode wire]. If in doubt, consult the electrode wire manufacturer.

C. Position a gas cylinder on the rear tray of the Power Source and lock securely to the Power Source cylinder bracket with the chain provided. If this arrangement is not used or the Power Source is not fitted with a gas cylinder tray then ensure that the gas cylinder is secured to a building pillar, wall bracket or otherwise securely fixed in an upright position.

D. Connect the TORCH power cable to the positive welding terminal (+) [negative welding terminal (-) for flux cored electrode wire]. If in doubt, consult the electrode wire manufacturer.

E. Fit the gas regulator and flowmeter to the gas cylinder then connect the gas hose from the rear of the Power Source to the Flowmeter outlet.

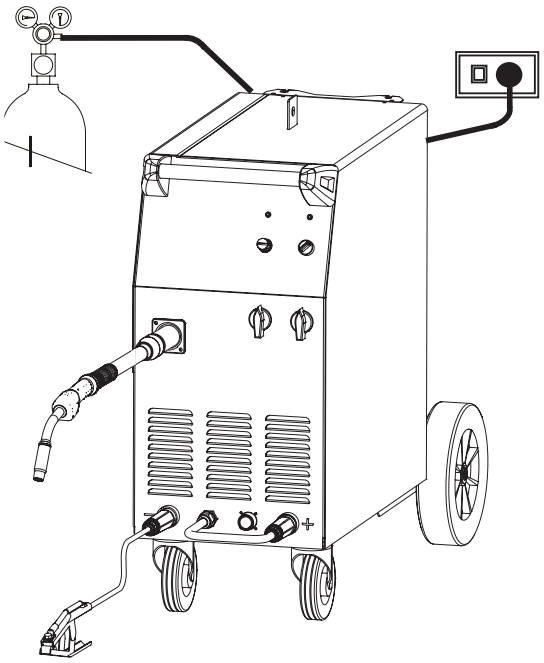
F. Dual groove feed rollers are supplied as standard. They can accommodate 0.9/1.2mm diameter hard wires. Select the roller required with the chosen wire size marking facing outwards.



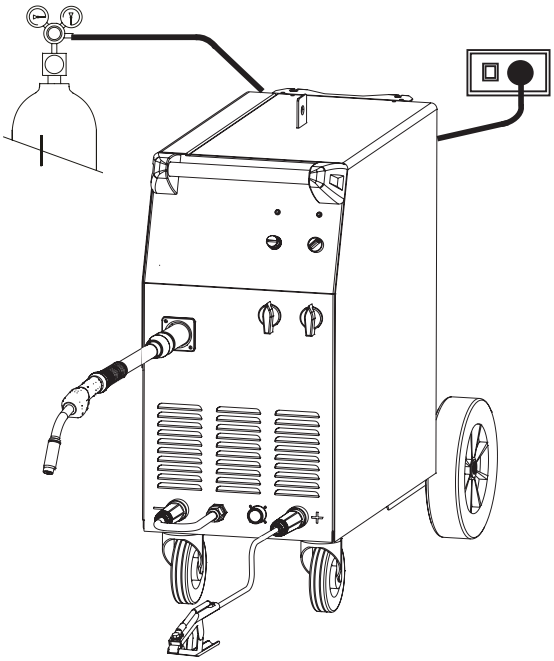
G. Fit the electrode wire spool to the wire reel hub. (Note that there is an adaptor supplied when using 200mm diameter wire spools). Ensure that the drive dog-pin engages the mating hole in the wire spool. Push the spool securing clip into place to retain the wire spool securely. The electrode wire should feed from the bottom of the spool.

H. MIG Torch, EURO MIG Torch Connection

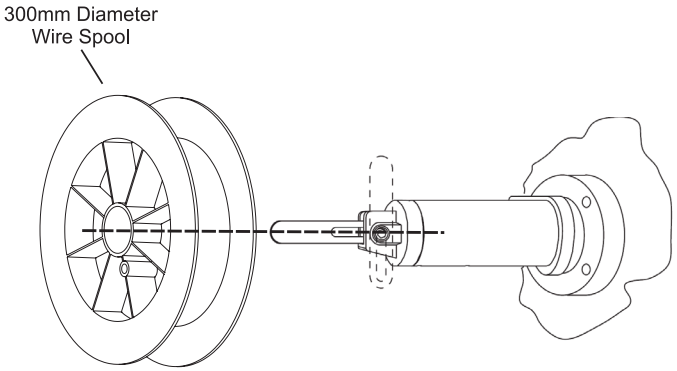
Fit the MIG Torch to the Power Source by pushing the torch connector into the brass torch adaptor and screwing the plastic torch nut clockwise to secure the torch to the torch adaptor. Remove the contact tip from the torch handset.



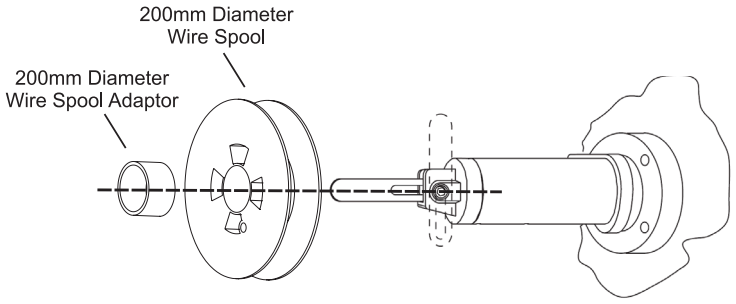
Setup for MIG (GMAW) Welding with Gas Shielded Shielded MIG Wire



Setup for MIG (GMAW) Welding with Gas Gasless MIG Wire



300mm Wire spool installation



200mm Wire spool installation

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Figure 4-6 WeldSkill 250 & 350 Setup and Spool Hub

Inserting Wire Into The Wire Feed Mechanism

Lift up the wire feeder pressure lever and pass the electrode wire through the inlet guide, between the rollers, through the centre guide, between the rollers, through the outlet guide and into the MIG torch.

WARNING

DO NOT WEAR GLOVES WHILE THREADING THE WIRE OR CHANGING THE WIRE SPOOL.

B. Lower the pressure lever and with the torch lead reasonably straight, feed the electrode wire through the torch. Fit the appropriate contact tip, eg a 0.9mm tip for 0.9mm wire.
C. Press the Torch switch to feed the wire through the torch.

WARNING

The electrode wire will be at welding voltage potential whilst it is being fed through the wirefeeder system if the wire is fed by using the TORCH SWITCH.

Drive Roller Pressure Adjustment

The moveable rollers apply pressure to the grooved feed rollers via a scaled adjustable tension screw. These devices should be adjusted to a minimum pressure that will provide satisfactory WIREFEED without slippage. If slipping occurs, and inspection of the wire contact tip reveals no wear, distortion or burn back jam, the conduit liner should be checked for kinks and clogging by metal flakes and swarf. If it is not the cause of slipping, the feedroll pressures can be increased by rotating the scaled tension screws clockwise. The use of excessive pressure may cause rapid wear of the feed rollers, shafts and bearing.

4.06 Wire Reel Brake

The wire reel hub incorporates a friction brake which is adjusted during manufacture for optimum breaking. If it is considered necessary, adjustment can be made by turning the large nut inside the open end of the hub clockwise to tighten the brake. Correct adjustment will result in the wire reel circumference continuing no further than 20mm after release of the trigger. The electrode wire should be slack without becoming dislodged from wire spool.

CAUTION

Overtension of brake will cause rapid wear of mechanical WIREFEED parts, overheating of electrical component and possibly an increased incidence of electrode wire Burnback into contact tip.

4.07 Setup For The WeldSkill 250 & 350 MIG Power Source When Fitted With Wirefeeder

Power Source Connections

A. Remove all packaging materials.
B. Connect the work lead to the negative welding terminal (-) [positive welding terminal (+) for flux cored electrode wire]. If in doubt, consult the electrode wire manufacturer.
C. Position a gas cylinder on the rear tray of the Power Source and lock securely to the Power Source cylinder bracket with the chain provided. If this arrangement is not used or the Power Source is not fitted with a gas cylinder tray then ensure that the gas cylinder is secured to a building pillar, wall bracket or otherwise securely fixed in an upright position.

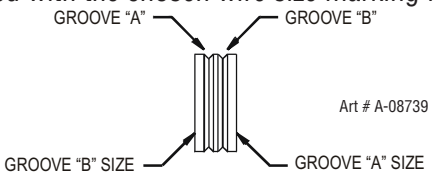
Wirefeeder Connections

A. Connect the welding power cable from the Wirefeeder's interconnection cables to the positive welding terminal (+) [negative welding terminal (-) for flux cored electrode wire]. If in doubt, consult the electrode wire manufacturer. (Power Source Torch Polarity Lead not required to be connected when using wirefeeder)

B. Connect the control cable from the Wirefeeder to the control socket on the Power Source.

C. Fit the gas regulator and flowmeter to the gas cylinder then connect the gas hose from the rear of the Wirefeeder to the Flowmeter outlet.

D. Dual groove feed rollers are supplied as standard. They can accommodate 0.9/1.2mm diameter hard wires. Select the roller required with the chosen wire size marking facing outwards.



E. Fit the electrode wire spool to the wirefeeder wire reel hub. (Note that there is an adaptor supplied when using 200mm diameter wire spools). Ensure that the drive dog-pin engages the mating hole in the wire spool. Push the spool securing clip into place to retain the wire spool securely. The electrode wire should feed from the bottom of the spool.

F. MIG Torch, EURO MIG Torch Connection

Fit the MIG Torch to the Wirefeeder by pushing the torch connector into the brass torch adaptor and screwing the plastic torch nut clockwise to secure the torch to the torch adaptor. Remove the contact tip from the torch handset.

Inserting Wire Into The Wire Feed Mechanism

A. Lift up the wire feeder pressure lever and pass the electrode wire through the inlet guide, between the rollers, through the centre guide, between the rollers, through the outlet guide and into the MIG torch.

WARNING

DO NOT WEAR GLOVES WHILE THREADING THE WIRE OR CHANGING THE WIRE SPOOL.

B. Lower the pressure lever and with the torch lead reasonably straight, feed the electrode wire through the torch. Fit the appropriate contact tip, eg a 0.9mm tip for 0.9mm wire.

C. Press the Torch switch to feed the wire through the torch.

WARNING

The electrode wire will be at welding voltage potential whilst it is being fed through the wirefeeder system if the wire is fed by using the TORCH SWITCH.

Drive Roller Pressure Adjustment

The moveable rollers apply pressure to the grooved feed rollers via a scaled adjustable tension screw. These devices should be adjusted to a minimum pressure that will provide satisfactory WIREFEED without slippage. If slipping occurs, and inspection of the wire contact tip reveals no wear, distortion or burn back jam, the conduit liner should be checked for kinks and clogging by metal flakes and swarf. If it is not the cause of slipping, the feed roll pressures can be increased by rotating the scaled tension screws clockwise. The use of excessive pressure may cause rapid wear of the feed rollers, shafts and bearing.

4.08 Wire Reel Brake

The wire reel hub incorporates a friction brake which is adjusted during manufacture for optimum breaking. If it is considered necessary, adjustment can be made by turning the large nut inside the open end of the hub clockwise to tighten the brake. Correct adjustment will result in the wire reel circumference continuing no further than 20mm after release of the trigger. The electrode wire should be slack without becoming dislodged from wire spool.

CAUTION

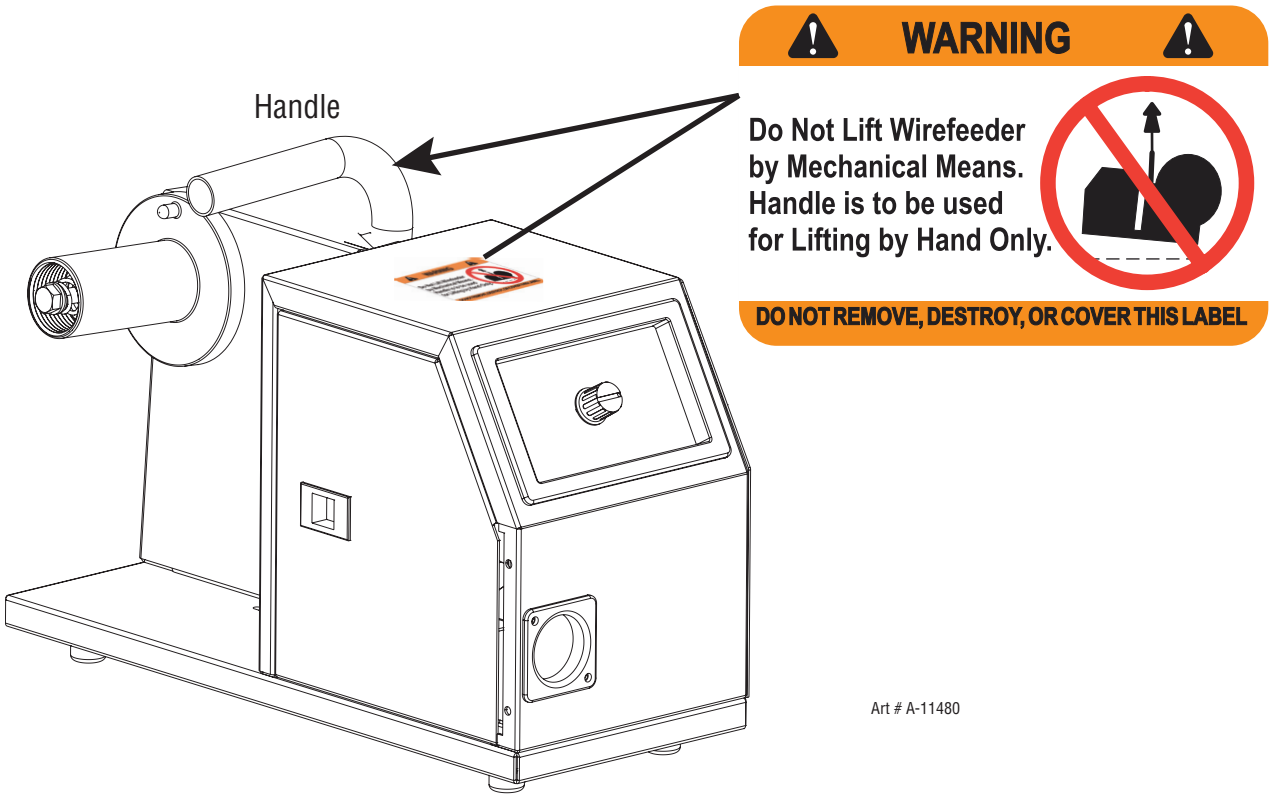
Overtension of brake will cause rapid wear of mechanical WIREFEED parts, overheating of electrical component and possibly an increased incidence of electrode wire Burnback into contact tip.

4.09 How to Lift WELDSKILL 4R Wirefeeder

WARNING

DO NOT lift the WELDSKILL 4R Wirefeeder by the Handle using mechanical means. The WELDSKILL 4R Wirefeeder may fall from a hook/mechanical hoist as the small bracket on the handle is not designed to secure a lifting hook/mechanical hoist in the corner of the Handle. The Handle is designed for lifting by hand only.

The WELDSKILL 4R Wirefeeder Handle is designed for lifting the Wirefeeder by hand only.


Handle
WARNING
Do Not Lift Wirefeeder by Mechanical Means. Handle is to be used for Lifting by Hand Only.
DO NOT REMOVE, DESTROY, OR COVER THIS LABEL

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Notes

SECTION 5:
MAIN CIRCUIT DESCRIPTION

5.01 Main Circuit Description

NOTE

This general description should be read in conjunction with the respective WELDSKILL Circuit Diagram (refer previous section).

In Single phase Power Sources, the standby switch connects directly to the incoming supply. In Three phase Power Sources, the standby switch connects to two phases of the incoming supply.

The standby switch contacts are open when the machine is placed in standby mode, thus isolating the cooling fan and auxiliary transformer from the incoming mains supply. There is no control voltage supply available when the machine is placed in standby mode. Hence no controls will function until the operator switches the standby switch from the “standby” position to the “on” position.

For protection of the wiring, there is on the WELDKSILL 250 and 350 a 3A fuse or circuit breaker in series with the input to the standby switch

WARNING

In the standby position the machine is not electrically isolated from the mains supply voltage.

The main transformer consists of a primary coil which is connected to the incoming mains via the main contactor.

CAUTION

Contactor KM does not electrically isolate the main transformer from the mains supply voltage when KM is de-energised.

Secondary output voltage from the main transformer is controlled by the Coarse & Fine switch settings. These switches determine which main transformer taps are to be connected to the mains supply voltage. The main contactor KM is controlled by the torch trigger switch via the Control PCB.

The secondary side of the main transformer is connected to a single phase bridge rectifier on the WELDSKILL 250 and to a three phase bridge rectifier on the WELDSKILL 350. The rectifier converts the AC voltage (from the secondary of the main transformer) to DC voltage.

Output filter capacitors on the WELDSKILL 250 provide voltage to the arc when the main transformer secondary voltage drops below the arc voltage. Resistor R3 (15ohm 50W) provides a discharge path for the output filter capacitors via a normally closed contact on the main contactor KM.

An output inductor ensures smoothing of the welding arc and reduces spatter.

A filter network consisting of a capacitor C1 and resistor R1 provides high frequency protection for the rectifier.

A thermal overload device (thermostat) is each fixed to the rectifier and transformer in series and connected to the Control PCB. In normal operation, the normally closed thermostats complete the circuit. When an over temperature occurs, the affected thermostat opens and breaks the circuit and thermal overload indicator LED on the front panel illuminates. The trigger is disabled, effectively disabling contactor KM, which controls power to the main transformer and disables the gas solenoid valve and motor drive.

Notes

SECTION 6: TROUBLESHOOTING

6.01 Power Source / Wirefeeder Faults

The following table is a guide for analysing problems and making repairs to the Power Source/Wirefeeder.

FAULT	CAUSE	REMEDY
1 Mains supply voltage is ON. Indicator light is not lit and welding arc can not be established.	A Primary fuse is blown. B Broken connection in primary circuit.	A Replace primary fuse. B Have an Accredited CIGWELD Service Provider check primary circuit.
2 Mains indicator light is not lit but welding arc can be established.	Burnt out Indicator light.	Have an Accredited CIGWELD Service Provider replace Indicator light.
3 Mains supply voltage is ON and power Indicator is lit however unit will not commence welding when the torch trigger switch is depressed.	A Faulty torch trigger B Circuit breaker tripped	A Repair or replace torch trigger switch/leads B Reset Circuit Breaker(s)
4 Mains supply voltage is ON, no wire feed but gas flows from the MIG Torch when the torch trigger switch is depressed.	A Electrode wire stuck in conduit liner or contact tip (burn-back jam). B Faulty control PCB	A Check for clogged / kinked MIG Torch conduit liner or worn contract tip. Replace faulty components. B Have an Accredited CIGWELD Service Provider investigate the fault.
5 Wire feeds when the torch trigger switch is depressed but arc cannot be established.	A Mig torch polarity lead is not connected into a welding output terminal. B Poor or no work lead contact.	A Connect the MIG torch polarity lead to either the positive welding output terminal or negative output terminal as required. B Clean work clamp area and ensure good electrical contact.
6 Inconsistent wire feed	A Worn or dirty contact tip B Worn feed roll. C Excessive back tension from wire reel hub. D Worn, kinked or dirty conduit liner	A Replace if necessary. B Replace if necessary. C Reduce brake tension on spool hub D Clean or replace conduit liner
7 No gas flow	A Gas hose is cut. B Gas passage contains impurities. C Gas regulator turned off. D Empty Cylinder	A Replace or repair. B Disconnect gas hose from the rear of Power Source or wirefeeder then raise gas pressure and blow out impurities. C Turn on. D Replace cylinder.

8	Gas flow continues after the torch trigger switch has been released.		Gas valve has jammed open due to impurities in the gas or the gas line.		Have an Accredited CIGWELD Service Provider repair or replace gas valve.
9	Wire does not feed when torch trigger depressed	A B	Faulty trigger switch / lead Circuit breaker tripped	A B	Repair or replace Torch / trigger lead Reset Circuit Breaker(s)
10	Wire continues to feed when torch trigger released	A B	Power Source in 4T (LATCH) mode Torch trigger leads shorted	A B	Change to 2T (NORMAL) mode Repair or replace Torch / trigger lead
11	Wire feeds when the torch trigger switch is depressed but arc can not be established and OVERHEAT led is illuminated		Power Source Overtemperature Protection circuit has operated		Cease welding and allow Power Source to Cool for 10 minutes. Overheat led will extinguish when the Power Source has cooled sufficiently.

Table 6-1 Power Source/Wirefeed Faults

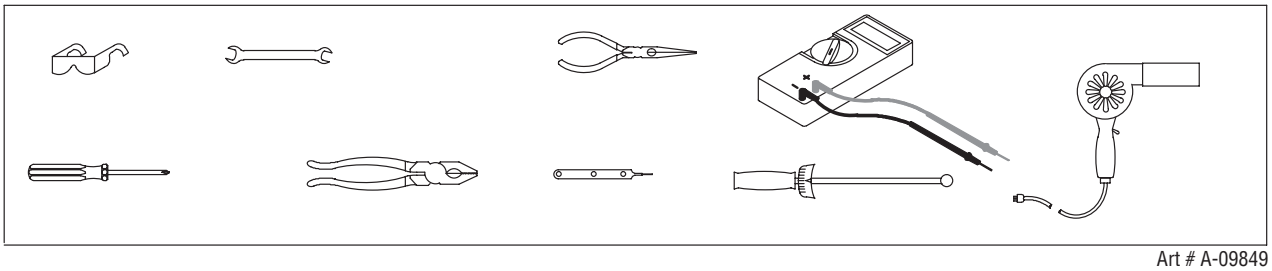
6.02 Checking Unit Before Applying Power

Turn SW1 to OFF position, and disconnect unit from primary line voltage before working on unit.

Significant DC voltage can remain on capacitors after unit is Off. Wait until all front panel LED's are off before removing case.

Before troubleshooting or applying power to unit, complete the following checks to avoid causing further damage.

6.03 Tools Needed for Troubleshooting and Servicing



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6.04 Case Removal

Read and follow safety information in Section 6.02 before proceeding.

1. Cover

- Remove all the screws from the cover panel

2. Door Panel
   - Carefully lift the door panel from power source.
   - Remove screws from the cover panel.

6.05 Visually Inspect

Visually inspect the inside of the Power Source. The levels of current present in these units can cause burning or arcing of PCB, transformers, switches, or rectifier when a failure occurs. Carefully inspect all components within these units.

Look in particular for the following:

a) Loose or broken wires or connectors.

b) Burned or scorched parts or wires or evidence of arcing.

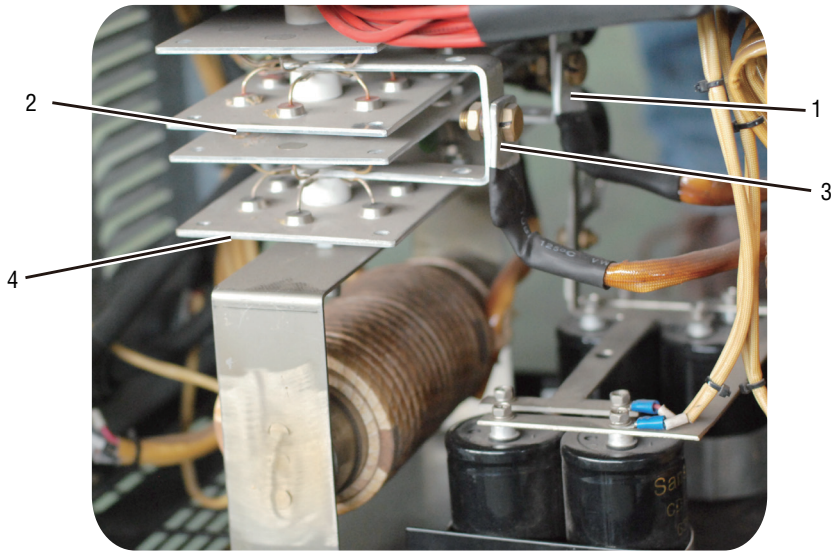
c) Any accumulation of metal dust or filings that may have caused shorting or arcing.

If any parts are damaged, they must be replaced. Refer to the Spare Parts section for a complete list of components used in the Power Source.

Locate the faulty component(s) then replace where necessary.

6.06 Check Main Output Rectifier

Read and follow safety information in Section 6.02 before proceeding.



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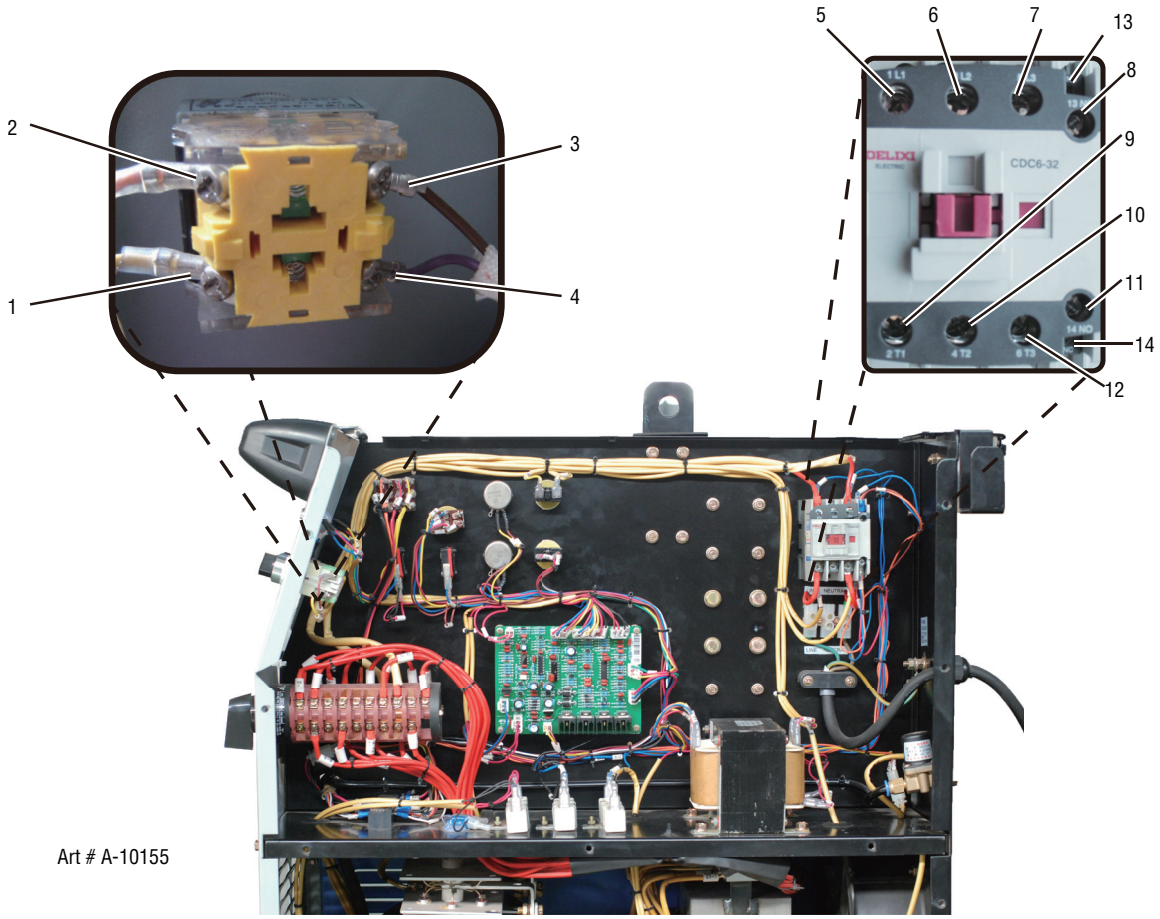
Output Rectifier Testing	Multimeter Lead Placement	Diode Voltage
AC1 to DC+	Positive meter lead to testpoint 1	0.2-0.8VDC
	Positive meter lead to testpoint 2	
AC2 to DC+	Positive meter lead to testpoint 3	0.2-0.8VDC
	Positive meter lead to testpoint 2	
AC1 to DC-	Positive meter lead to testpoint 4	0.2-0.8VDC
	Positive meter lead to testpoint 1	
AC2 to DC-	Positive meter lead to testpoint 4	0.2-0.8VDC
	Positive meter lead to testpoint 3	

Table 6-2 Output Rectifier, Multimeter set to measure Diode Voltage

6.07 Check main On / Off Switch



Power Switch Testing	Multimeter Lead Placement	Impedance
Switch ON	Positive meter lead to testpoint 2 Negative meter lead to testpoint 3	0 to 0.5 Ω
Switch ON	Positive meter lead to testpoint 1 Negative meter lead to testpoint 4	0 to 0.5 Ω
Switch OFF	Positive meter lead to testpoint 2 Negative meter lead to testpoint 3	> 1M Ω
Switch OFF	Positive meter lead to testpoint 1 Negative meter lead to testpoint 4	> 1M Ω

Table 6-3 Power Switch, Multimeter set to measure ohms (Ω)

6.08 Check Main AC Contractor

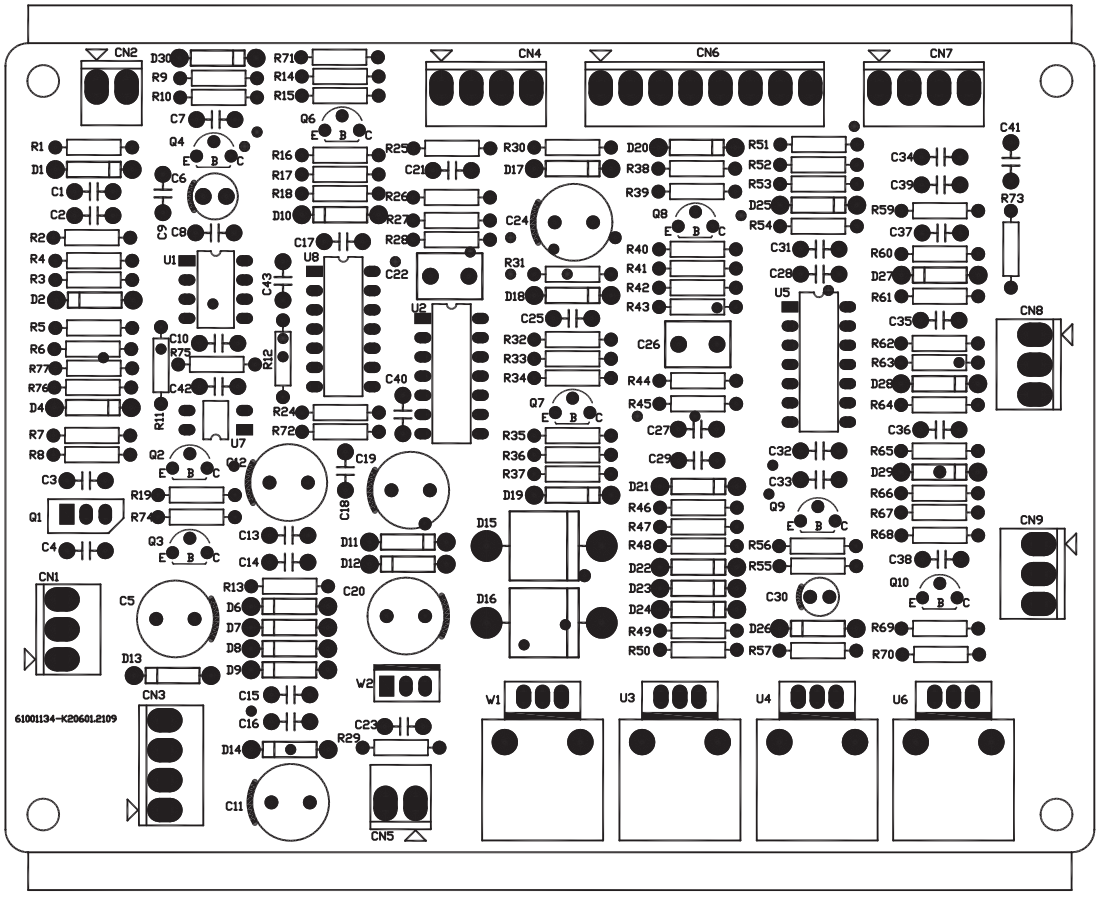
AC Contactor Testing	Multimeter Lead Placement	Impedance
Contactor ON	Positive meter lead to testpoint 5	0 to 0.5 Ω
	Positive meter lead to testpoint 9	
	Positive meter lead to testpoint 6	0 to 0.5 Ω
	Positive meter lead to testpoint 10	
	Positive meter lead to testpoint 7	0 to 0.5 Ω
	Positive meter lead to testpoint 12	
	Positive meter lead to testpoint 8	0 to 0.5 Ω
	Positive meter lead to testpoint 11	
	Positive meter lead to testpoint 13	> 1M Ω
	Positive meter lead to testpoint 14	

AC Contactor Testing	Multimeter Lead Placement	Impedance
Contactor OFF	Positive meter lead to testpoint 5	> 1M Ω
	Positive meter lead to testpoint 9	
	Positive meter lead to testpoint 6	> 1M Ω
	Positive meter lead to testpoint 10	
	Positive meter lead to testpoint 7	> 1M Ω
	Positive meter lead to testpoint 12	
	Positive meter lead to testpoint 8	> 1M Ω
	Positive meter lead to testpoint 11	
	Positive meter lead to testpoint 13	0 to 0.5 Ω
	Positive meter lead to testpoint 14	

Table 6-4 AC Contactor, Multimeter set to measure Diode Voltage

Measurements may be made directly onto the main input rectifier. AC1 and AC2 may be measured from the pins on the mains supply plug with the main power switch set to the ON position.

6.09 Control PCB



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CN1 Header Pin	Pin Function	Signal
1	AC Contactor control	36VAC
2	N/A	N/A
3	0V	0V

Table 6-5 CN1 Header Pin Function(connect to windings of AC contactor)

CN2 Header Pin	Pin Function	Signal
1	Thermostat	+15VDC
2	0V	0VDC

Table 6-6 CN2 Header Pin Function(connect to Overheat thermostat)

CN3 Header Pin	Pin Function	Signal
1	Control Signal power supply	20VDC
2	0V	0V
3	Control Signal power supply	20VAC
4	N/A	

Table 6-7 CN3 Header Pin Function(connect to control transformer)

CN4 Header Pin	Pin Function	Signal
1	Power LED Indication	+15VDC
2	0V	0V
3	Overheat indication	+15VDC
4	0V	0V

Table 6-8 CN4 Header Pin Function(connect to power LED and overheat LED)

CN5 Header Pin	Pin Function	Signal
1	wiredrive power supply	30VAC
2	wiredrive power supply	30VAC

Table 6-9 CN5 Header Pin Function(connect to control transformer)

CN6 Header Pin	Pin Function	Signal
1	0V	0V
2	Burn back time setpoint	
3	Spot Switch Signal	
4	Spot Switch Signal	
5	Spot time setpoint	
6	Spot time setpoint	
7	15VDC	+15VDC
8	Wire Inch	+15DV(Inch switch on)

Table 6-10 CN6 Header Pin Function(connect to control transformer)

CN7 Header Pin	Pin Function	Signal
1	2T/4T Switch Signal	
2	2T/4T Switch Signal	+15VDC
3	0VDC	0VDC
4	Tourch Switch	+15VDC

Table 6-11 CN7 Header Pin Function(connect to tourch seitch and 2T/4T switch)

CN8 Header Pin	Pin Function	Signal
1	0V	0V
2	wirespeed setpoint	0-- +5VDC
3	+15VDC	15VDC

Table 6-12 CN8 Header Pin Function(connect to wirespeed potentiometer)

CN9 Header Pin	Pin Function	Signal
1	0V	0V
2	wirefeeder brake	
3	Wirefeeder Driver	24VDC

Table 6-13 CN9 Header Pin Function(connect to wirefeeder)

6.10 Circuit Diagram for Control PCB

1. Circuit Diagram for Control PCB

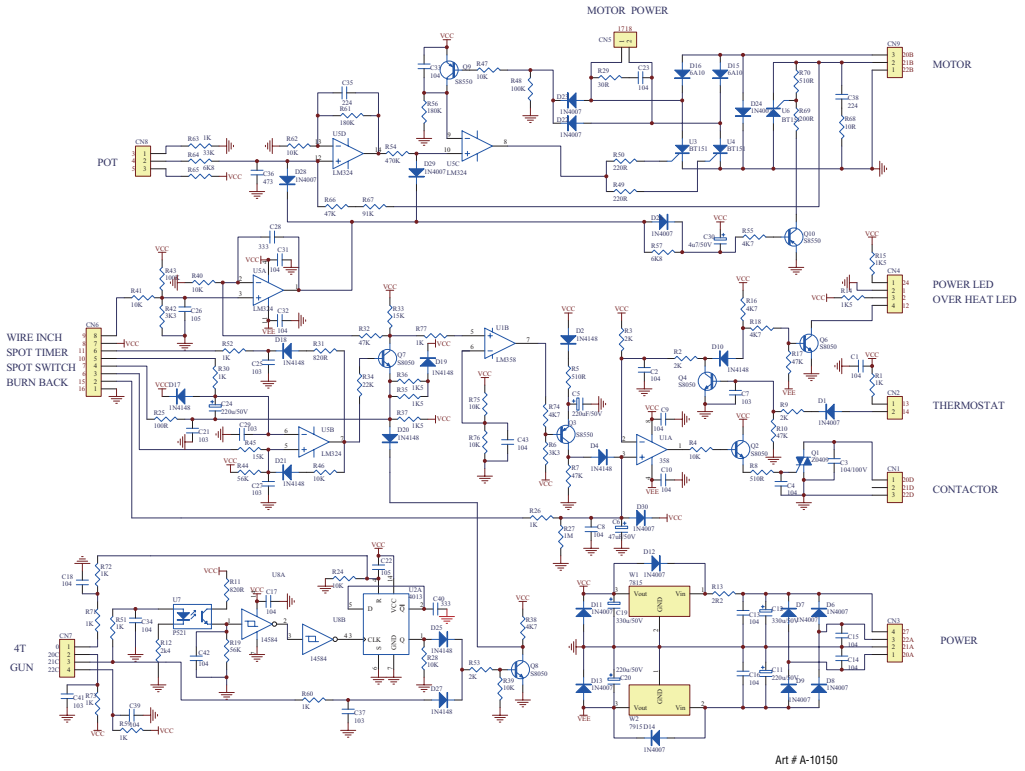


Figure 1 – Circuit Diagram Control PCB for Weldskill 250 & 350

2. Power Supply

   40 VAC CT is derived from the auxiliary transformer.

   This AC voltage is full wave rectified by diodes D6, D7, D8, D9 and the resultant DC voltage is smoothed by C11 & C12 to provide a low ripple DC supply of approximately 28V. This voltage is regulated to +/- 15V by regulators W1 & W2 and smoothed by capacitors C19 & C20.

3. Standby (Torch trigger switch open)

   Transistor Q8 input is held to ground by R39. The collector of Q8 is held high by R38. D20 is reverse biased, and Q7 is off.

   The collector of Q7 is high, so U5a pin 2 is held above pin 3, and the output pin 1 is low, disabling the motor control via D28 & D29.

   In SPOT mode or 2T mode, the switch connected to CN7 terminals 1 & 2 will be closed. This pulls U2 pin 4 high through R71, R72, & R73, forcing U2 pin 1 to be low.

4. Torch trigger switch closed

   When the torch trigger switch is closed, +15V feeds through R59, R60 & R53 to turn on Q8. The collector of Q8 goes low, pulling the emitter of Q7 low. This pulls the collector low causing U5 pin 2 to fall below pin 3, and causing pin 1 to go high. D28 & D29 are now reverse biased allowing U5 pin 8 to send phase angle control pulses to SCR's U3 & U4. The collector of Q7 which is now low, causes U1 pin 5 to fall below pin 6, and the output pin 7 goes low, turning on Q3 which causes U1 pin 3 to go high, and charges C6. U1 pin 1 goes high turning on Q2, which turns on Q1, engaging the contactor and enabling welding output.

   When the torch trigger switch is closed, U7 is turned on via R51 & R12. The output of U7 will be closed and U8 pin 1 will be high. U8 pin 4 will also be high putting a positive going clock signal into U2. The output of U2, pin 1,remains low as U2 pin 4 is being held high in SPOT or 2T mode.

5. Motor drive

   To determine wirespeed, a voltage is derived from the +15V rail through R65 to be supplied into the wirespeed potentiometer. Established by the front panel mounted wirespeed potentiometer, R63, R64, a voltage set point is fed to U5 pin 12.

   Motor voltage is fed also into U5 pin 12, but as a negative voltage. U5D is set up as an error amplifier with its gain determined by R61 & R62, so the output of U5 pin 14 will be the difference between the demand signal from the front panel potentiometer & the motor voltage.

   The motor power comes from the auxiliary transformer 30VAC winding into connector CN5. Diodes D22 & D23 rectify this and feed it to Q9 through R47. Q9 turns off whenever the 30VAC is above 14V. Q9 is the zero crossing detector for the phase angle control amplifier U5C. When Q9 is on, C33 is shorted and U5 pin 9 is high. When Q9 turns off, C33 charges down through R56. When the voltage on U5 pin 9 equals the voltage on pin 10, pin 8 changes state, providing gate current to the scr's U3 & U4.

   Scr's U3 & U4, along with diodes D15 & D16 form a full wave bridge, with 30VAC from the auxiliary transformer as its input. The motor is connected to the output of this bridge, so the phase angle control of U3 & U4 will cause variation in the motor voltage, and hence the motor speed.

6. Spot timer

   When SPOT MODE is selected on the front panel, CN6 terminals 3 & 4 are connected. Upon trigger, capacitor C24 charges through R31, D18, R52, R30 and the spot time potentiometer on the internal panel. When C24 charges to above the voltage on U5 pin 5, the output of U5B changes state turning off Q7 and disabling the motor drive and the contactor & solenoid.

   R46 and D21 cause U5 pin 5 to be pulled high, effectively disabling the spot timer, until the trigger is released and the op amp U5B is reset.

   The SPOT potentiometer determines the charging rate for C24, thus establishing the SPOT TIME.

7. Burnback

   When the torch trigger is closed, transistor Q3 which charges C6. When the torch trigger is opened, U1 pin 3 remains on as C6 discharges through the internal panel BURNBACK potentiometer. The rate of discharge of C6 through the burnback potentiometer will determine the duration U1A will remain on, and therefore how long the contactor & solenoid will remain on after the trigger is released.

8. Brake

   When the torch trigger is pressed op amp U5 pin 1 output will be high. The base of Q10 will be high & Q10 will be off.

   When the torch trigger is opened, opamp U5 pin 1 output goes low, charging C30, and as the voltage across C30 goes above 15V, Q10 will start to turn on. As Q10 turns on, it will trigger scr U6 through R69.

   The scr U6 is connected across the motor, so the motor will be shorted when U6 is turned on, causing the motor to brake rapidly. R70 provides a path for stray leakage gate current of U6 to prevent false turn on of the brake scr U6.

   Diode D26 provides a rapid discharge of C30 to ensure the motor scr's & brake scr's are never both on at the same time.

9. Thermostats

   Thermostats are connected in series to CN2 the over temperature LED is connected to CN4, terminals 3 & 4.

   The thermostats are normally closed types.

   When both thermostats connected to CN2 are closed, Q4 is turned on by R1, D1 and R9. R10 provides a path for base leakage current of Q4. With Q4 turned on, U1 pin 2 will be low, ready for normal operation.

   If either thermostat is opened, Q4 will turn off, causing the voltage on U1 pin 2 to rise, turning the contactor & solenoid off. The base of Q6 will go high through R16 & R18, which are no longer held low by D10 & Q4. Q6 will turn on, causing the over temperature LED to turn on.

10. Inch

The INCH button is connected to CN6 terminals 7 & 8.

When the INCH button is pressed U5 A pin 3 is pulled high, causing U5 pin 1 to go high, enabling motor drive operation.

As Q7 / U1B / Q3 do not change state, the contactor & solenoid are not activated. Only the wire drive motor operates when the INCH button is pressed.

11. Latch

The LATCH switch is connected to CN7 terminals 1 & 2.

When the LATCH switch on the internal panel is open, U2 pin 4 is held low by R24.

When the trigger is pressed, U7 is turned on via R51 & R12. The output of U7 will be closed and U8 pin 1 will be high. U8 pin 4 will also be high putting a positive going clock signal into U2. The output of U2, pin 1,changes state from low to high, turning on Q8 (the trigger transistor) via D25.

When the trigger is released, U7 will turn off, and U8 pin 4 will go low. The output of U2 will still be high and the trigger transistor Q8 will still be on, keeping the machine triggered.

When the trigger is pressed, U7 is turned on via R51 & R12. The output of U7 will be closed and U8 pin 1 will be high. U8 pin 4 will also be high putting a positive going clock signal into U2. The output of U2, pin 1, changes state from high to low, turning off Q8 (the trigger transistor) via D25.

12. Inputs to Control PCB

Terminal	Input Descriptions	Reference
CN3/1	AC supply for circuit CN3/1= 20 Vac	CN3/2
CN3/3	AC supply for circuit CN3/3= 20 Vac	CN3/2
CN5/1	AC supply for wire drive motor CN5/1= 30 Vac	CN5/2
CN7/3	Input signal for torch trigger CN7/3 = 0 Vdc (Torch trigger switch open) CN7/3 = 8 to 12 Vdc (Torch trigger switch closed)	CN3/2
CN2/2	Input signal for thermostat CN2/2 = 8 to 12 Vdc (Thermostat closed) CN2/2 = 0 Vdc (Thermostat open)	CN3/2
CN8/2	Reference signal from wirespeed potentiometer wiper CN8/2 = ~1.1 Vdc (Wirespeed potentiometer minimum) CN8/2 = ~7.0 Vdc (Wirespeed potentiometer maximum)	CN3/2
CN7/1	Latch switch CN7/1= ~0 Vdc (Latch switch open) CN7/1= ~11.5Vdc (Latch switch closed)	CN3/2

Table 6-14 Inputs to Control PCB 7978050

13. Outputs from Control PCB

Terminal	Output Descriptions	Reference
CN9/3	DC supply to wire drive motor CN9/3 = 0 to -24 Vdc	CN9/1
CN1/1	AC supply to contactor and gas solenoid CN1/1 = 0 Vac (contactor & solenoid on)	CN1/3
CN8/3	Reference voltage for wirespeed potentiometer CN8/3 = ~7.0 Vdc	CN3/2
CN4/1	POWER led CN4/1 = 1 to 3 Vdc (POWER led on)	CN4/2
CN4/3	OVER TEMPERATURE led CN4/3= 15Vdc (Thermostat closed) CN4/3= 1 to 3 Vdc (Thermostat open)	CN4/2
CN6/7	15V supply for INCH button CN6/7= 15 Vdc	CN3/2
CN6/2	BURNBACK CN6/2 = 0 Vdc (Trigger open) CN6/2 = 12 to 14 Vdc (Trigger closed)	CN3/2

Table 6-15 Outputs from Control PCB

6.11 Advanced Troubleshooting

If the problem cannot be solved by the basic (external) troubleshooting guide, the Power Source covers and/or the Wirefeeder covers will have to be removed. The advanced level of troubleshooting allows the technician with a few common tools to remove the covers and analyse failures.

CAUTION

Never open the Power Source covers unless the Mains supply voltage to the Power Source is disconnected from the Mains power point.

1 Test Equipment and Tools

- Digital Multimeter
- DC clip-on ammeter
- Screwdriver and 8mm across flats nutdriver
- CRO (20 Mhz bandwidth) & isolating transformer

2 Power Source or Wirefeeder Faults

CAUTION

Leave the Mains supply voltage disconnected from the Power Source during the visual inspection.

a) Wirefeeder

i) Remove all the case screws that fix the right hand panel to the Wirefeeder (the right hand panel as seen from the front).

b) Power Source

i) Remove all the case screws that fix the left hand panel to the Power Source (the left hand panel as seen from the front).

ii) Remove all the case screws that fix the right hand panel to the Power Source (the right hand panel as seen from the front).

3 Visually Inspect

Visually inspect the inside of the Power Source or Wirefeeder. The levels of current present in these units can cause burning or arcing of PCB, transformers, switches, rectifier or contactor when a failure occurs. Carefully inspect all components within these units.

Look in particular for the following:

a) Loose or broken wires or connectors.

b) Burned or scorched parts or wires or evidence of arcing.

c) Any accumulation of metal dust or filings that may have caused shorting or arcing.

If any parts are damaged, they must be replaced. Refer to the Spare Parts section for a complete list of components used in the Power Source.

Locate the faulty component(s) then replace where necessary.

At this point, apply voltage to the Power Source.

CAUTION

There are extremely dangerous voltage and power levels present inside these Power Sources. Do not attempt to diagnose or repair unless you have had training in power electronics measurement and troubleshooting techniques.

Once power is applied to the Power Source, there are extremely hazardous voltage and power levels present.

Do not touch any live parts.

4 Power Source or Wirefeeder Faults

The following table is a guide for analyzing problems and making repairs to the Power Source and/or Wirefeeder.

Fault	Possible Cause	Remedy
1 The wirefeed motor and the contactor do not operate when the torch trigger switch is depressed.	A The 20V AC supply control voltage from the auxiliary transformer is not connected to the Control PCB.	A Check for 20 on PCB at pins CN3/1 & CN3/3. Repair fault.
	B The thermostat contacts are open circuit or the wires to the thermostat are broken.	B Replace the thermostat or repair the thermostat wires.
	C Bad electrical connection between the torch trigger switch and connector on PCB at pins CN7/3 or CN7/4.	C Check the continuity from connector to the torch trigger switch. Repair the defective electrical connection.
	D MIG Torch has been damaged internally, trigger wires are making contact with welding power cable.	D Repair the torch.
2 The contactor operates when the torch trigger switch is depressed but the wirefeed motor does not rotate.	A The 30VAC for the wire feed motor is not connected to PCB.	A Check for 30V AC on PCB at pins CN5/1 & CN5/2. Repair fault.
	B Bad electrical connection between the wiper arm on the wire speed potentiometer and connector on PCB at pin CN8/2 or CN8/3.	B Check the continuity from connector to the wire speed potentiometer. Repair the defective electrical connection.
	C Bad electrical connection between the wirefeed motor and connector on PCB at pins CN9/3 or CN9/1.	C Check continuity between the wirefeed motor and connector. Repair fault.
	D Motor fuse (circuit breaker) FU2 open.	D Check fuse (circuit breaker)
3 The wirefeed motor operates at maximum speed and cannot be adjusted.	Bad electrical connection between the wire speed potentiometer and connector on PCB at pin CN8/1.	Check the continuity from connector to the wire speed potentiometer. Repair the defective electrical connection.
4 Wirefeed motor operates when the torch trigger switch is depressed but the gas valve and the Power Source contactor do not operate.	Bad electrical connection(s) between the connector on PCB at pin CN1/1 & CN1/3 and the wires to the contactor coil or gas valve	Repair the broken wire(s) or termination point(s) after the fault has been isolated.

Table 6 -16 Power Source or Wirefeeder Faults

5 Power Source Faults

The following table is a guide for analysing problems and making repairs to the Power Source.

Fault	Possible Cause	Remedy
1 The wirefeed motor and the contactor do not operate when the torch trigger switch is depressed.	A Control fuse or circuit breaker is open circuit or the wires to the fuse holder are broken.	A Replace the fuse or repair the fuse holder wires.
	B The primary winding in the auxiliary transformer is open circuit or the wires to the primary winding are broken.	B Replace the auxiliary transformer or repair the wires to it.
	C The STANDBY SWITCH is in the STANDBY position.	C Switch to ON.
2 Control fuse or circuit breaker ruptures on an intermittent basis.	An extension lead is being used which decreases the Mains supply voltage to the Power Source. Thus the control fuse or circuit breaker has to carry a higher current.	Remove the extension lead & plug the welder's Mains supply lead directly into the Mains outlet.
3 The contactor operates when the torch trigger switch is depressed but a welding arc can not be established.	A The contactor contacts are burnt and are not making a good electrical contact.	A Measure the voltage drop across all contactor contacts while the Power source is supplying welding current to a load bank. If the measured voltage is greater than 100mV then replace the contactor.
	B The Coarse or Fine switch contacts are burnt and are not making a good electrical contact.	B Measure the voltage drop across all closed contacts while the Power source is supplying welding current to a load bank. If the measured voltage is greater than 100mV then replace the defective switch.
	C Bad electrical connection(s) between the Mains supply voltage wires and the primary side of the main transformer.	C Repair the broken wire(s) or termination point(s) after the fault has been isolated.
	D Bad electrical connection(s) between the primary side of the main transformer taps and the Coarse or Fine switches.	D Repair the broken wire(s) or termination point(s) after the fault has been isolated.

4	A welding arc can be established but the welding current diminishes. Higher Coarse/Fine switch positions must be set to obtain the same welding conditions.	A	Bad electrical connection(s) between the secondary side of the main transformer and the rectifier.	A	Repair the termination point(s) after the fault has been isolated.
		B	Bad electrical connection(s) between the secondary rectifier and the positive or negative welding terminals.	B	Repair the termination point(s) after the fault has been isolated.
		C	Poor electrical contact between the work clamp & the work piece.	C	Repair or replace work clamp. Clean the work piece around the work clamp area to ensure a good electrical connection.
5	A welding arc can be established but the excessive welding spatter is produced for control setting that normally produce minimal spatter.	A	The inductor windings have overheated or short circuited due to: i) Fan failure, ii) Blockage of the front air vents, iii) Duty cycle has been exceeded for prolonged periods.	A	Examine the inductor winding for burn marks or discolouration due to excessive heat. Replace the inductor if its windings have short circuited.
		B	The output capacitors (ie. 22000uF) are not connected to the DC terminals of the secondary rectifier.	B	Repair the termination point(s) between the capacitors and the DC terminals of the secondary rectifier.
		C	The output capacitors are open circuit.	C	Replace all the capacitors if: i) The rubber safety valve has ruptured, ii) The plastic around the capacitor terminals has melted.
6	A large arc occurs when the electrode wire touches the work piece 20 seconds after a weld has been completed.	A	Resistor R3 (15 ohm 50W) is open circuit or it has bad electrical connections.	A	Replace R3 if it is open circuit or repair the termination point(s) after the fault has been isolated
		B	The normally closed contacts in the contactor KM are open when the contactor is de-energised.	B	Replace the contactor KM if its contacts are not normally closed when it is de-energised.

Table 6 -17 Power Source Faults

6.12 Test Specification

1 Open Circuit Voltage (OCV)

Measure open circuit voltage at the output terminals for each of the following settings.

Meter used: DC Voltmeter.

Switch Settings	WELDSKILL 250 Open Circuit Voltage (OCV)
Position 1	22.5 V
Position 2	23.6 V
Position 3	24.8 V
Position 4	26.2 V
Position 5	27.8 V
Position 6	29.6 V
Position 7	31.6 V
Position 8	33.8 V
Position 9	36.1 V
Position 10	39.1 V
Position 11	42.4 V
Position 12	46.3 V

Table 6-18 Open Circuit Voltage WELDSKILL 250

Switch Settings		WELDSKILL 350 Open Circuit Voltage (OCV)
SW1(Coarse): 1	SW2(Fine): 1	16.8 V
SW1(Coarse): 2	SW2(Fine): 1	21.3 V
SW1(Coarse): 3	SW2(Fine): 1	29.1 V
SW1(Coarse): 3	SW2(Fine): 2	30.5 V
SW1(Coarse): 3	SW2(Fine): 3	32.1 V
SW1(Coarse): 3	SW2(Fine): 4	33.8 V
SW1(Coarse): 3	SW2(Fine): 5	35.5 V
SW1(Coarse): 3	SW2(Fine): 6	37.6 V
SW1(Coarse): 3	SW2(Fine): 7	39.7 V
SW1(Coarse): 3	SW2(Fine): 8	42.2 V

Table 6-19 Open Circuit Voltage WELDSKILL 350

2 Magnetising Current

Measure magnetising current.

Meter used: AC Current Meter

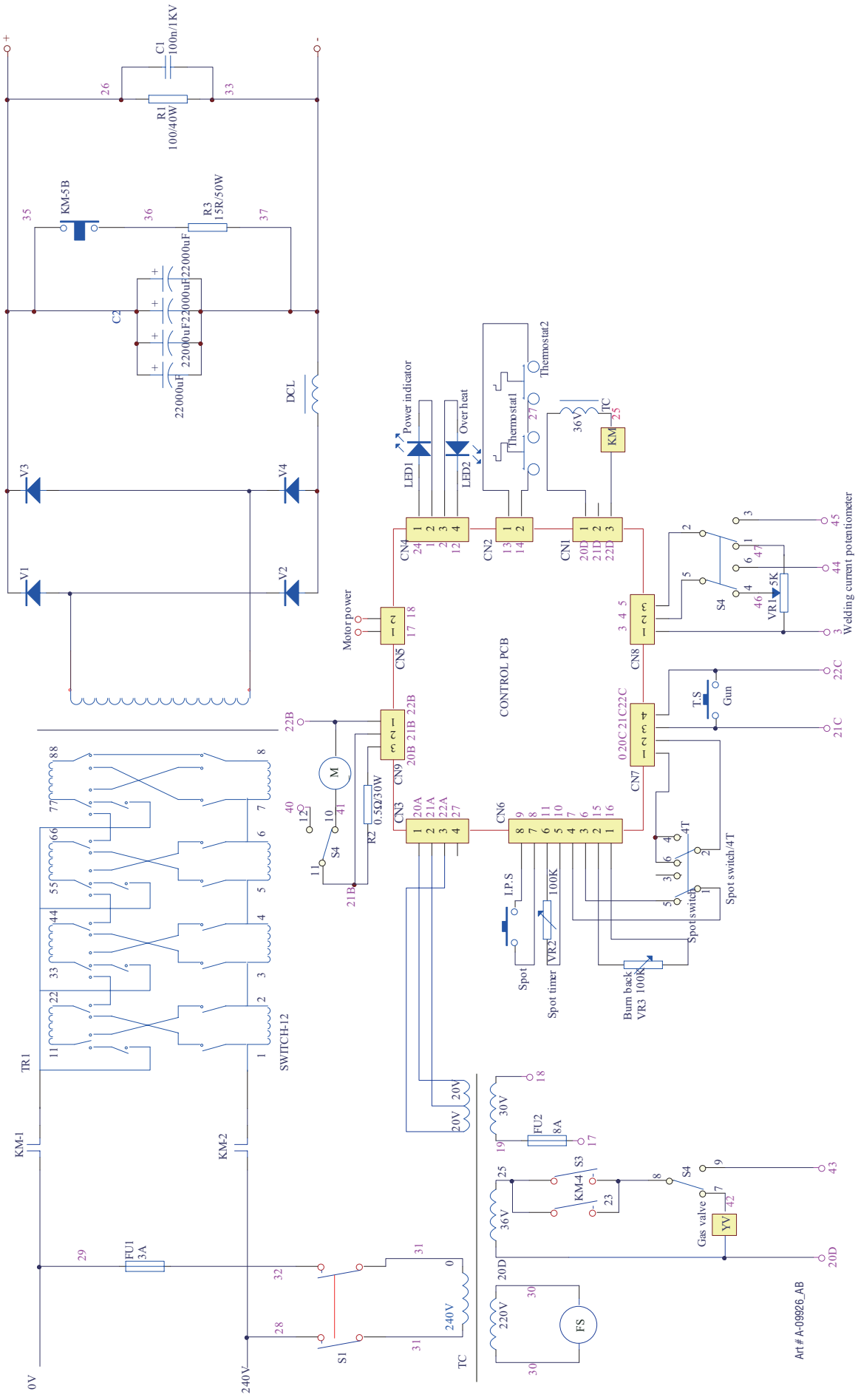
Model	WELDSKILL 250	WELDSKILL 350
Magnetising Current (A)	0.5 – 3.0	0.5 – 6.0

Table 6-20 Magnetising Current WELDSKILL 250, WELDSKILL 350

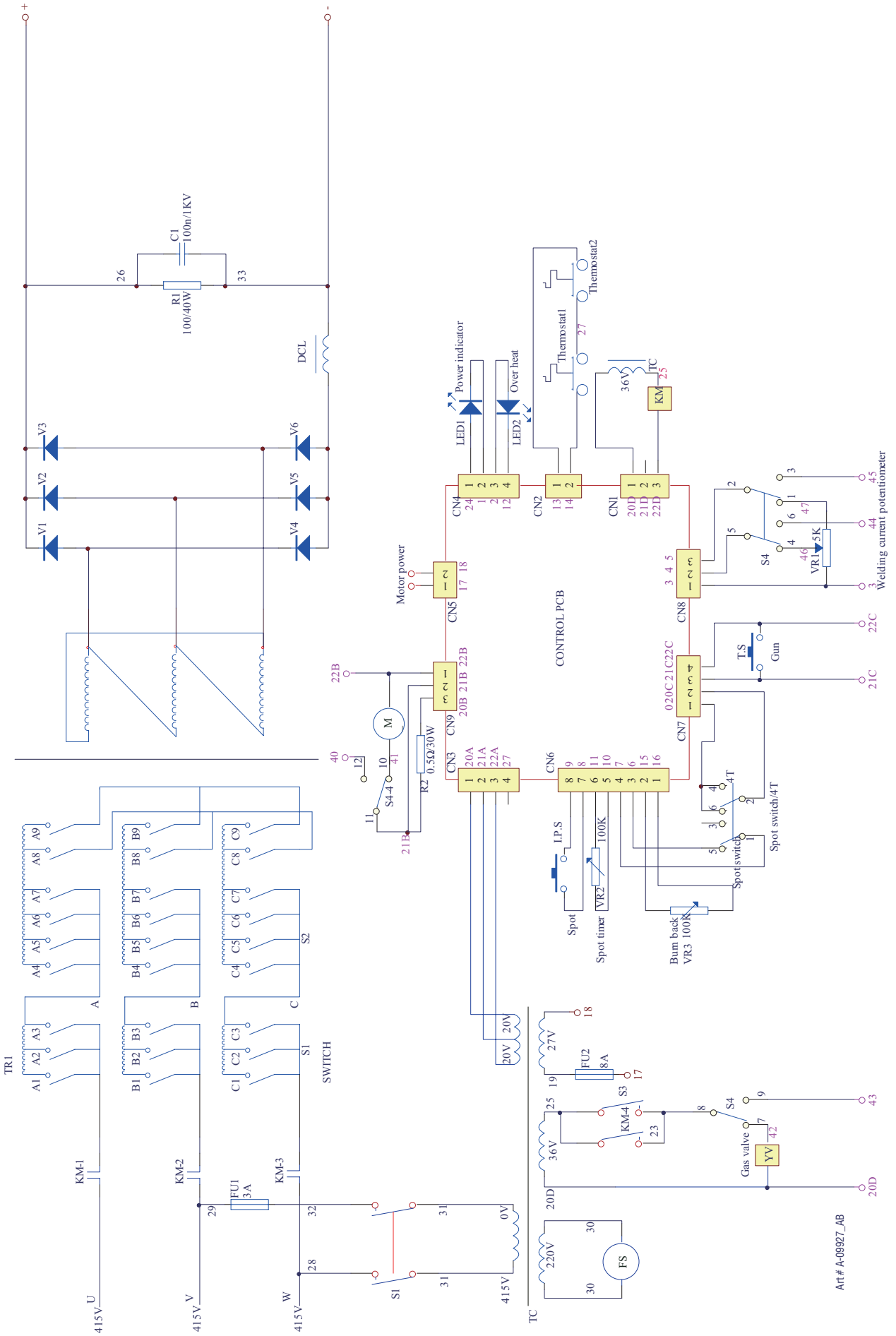
Check that the output voltage decays to zero within 15 seconds after trigger is released.

Meter used: DC Voltmeter

6.13 WELDSKILL 250 MIG POWER SOURCE CIRCUIT DIAGRAM



6.14 WELDSKILL 350 MIG POWER SOURCE CIRCUIT DIAGRAM



SECTION 7:
DISASSEMBLY PROCEDURE

7.01 Safety Precautions for Disassembly

Read and follow safety information in Section 6.02 before proceeding.

Unplug unit before beginning Disassembly procedure.

7.02 Control Board Removal

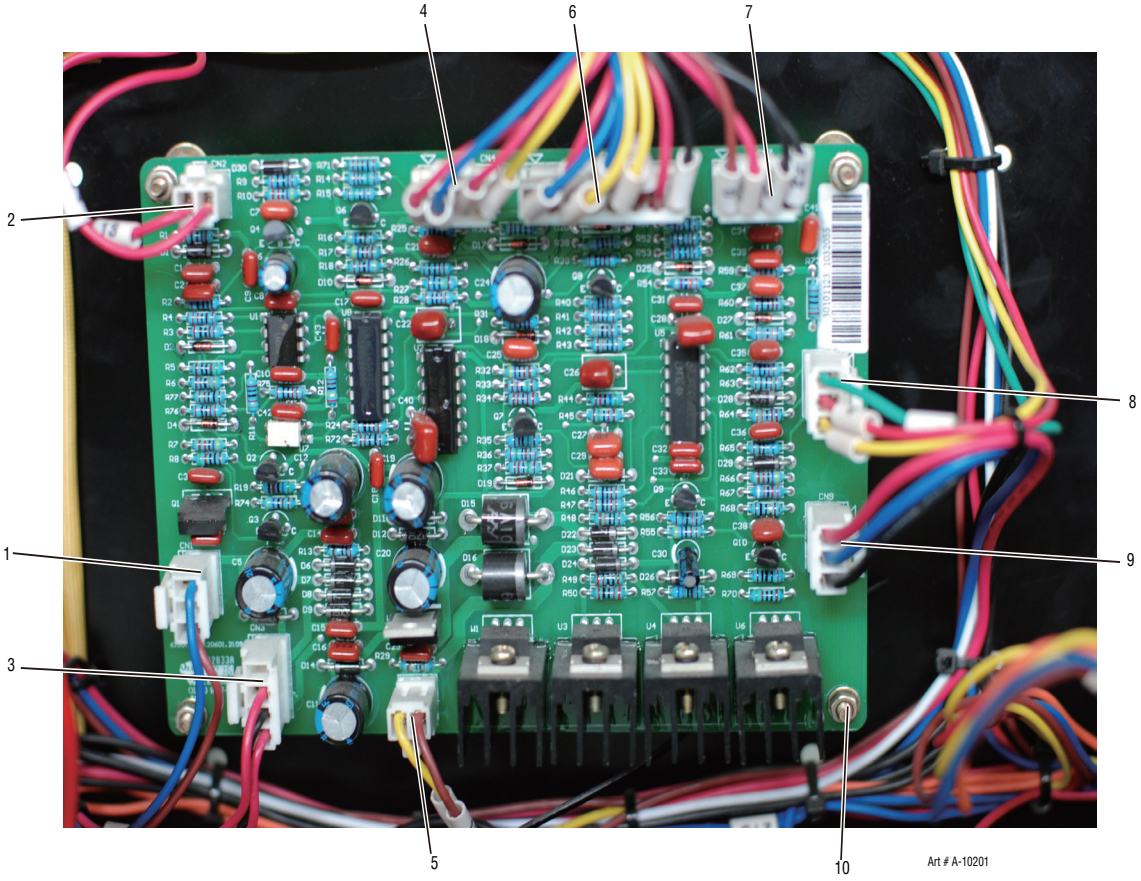
⚠ Read and follow safety information in Section 6.02 before proceeding with disassembly

Remove case (refer to 6.04) before remove control board.

Refer to graphics on page 7-3.

1. Disconnect CN1 harness from CN1 connector.
2. Disconnect CN2 harness from CN2 connector.
3. Disconnect CN3 harness from CN3 connector.
4. Disconnect CN4 harness from CN4 connector.
5. Disconnect CN5 harness from CN5 connector.
6. Disconnect CN6 harness from CN6 connector.
7. Disconnect CN7 harness from CN7 connector.
8. Disconnect CN8 harness from CN8 connector.
9. Disconnect CN9 harness from CN9 connector.
10. M4 screw,remove 4 screws from control panel.

Ensure to unplug all harness from the main control PCB.



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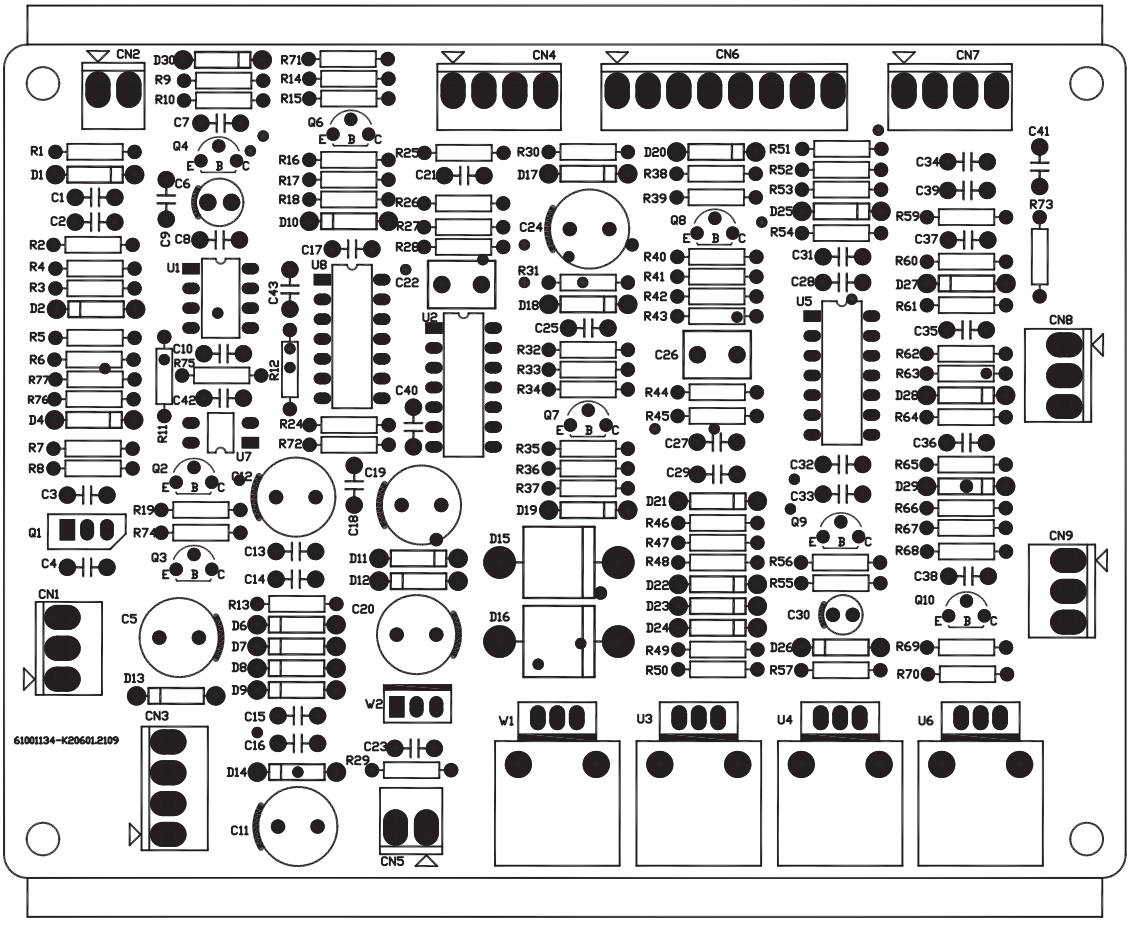
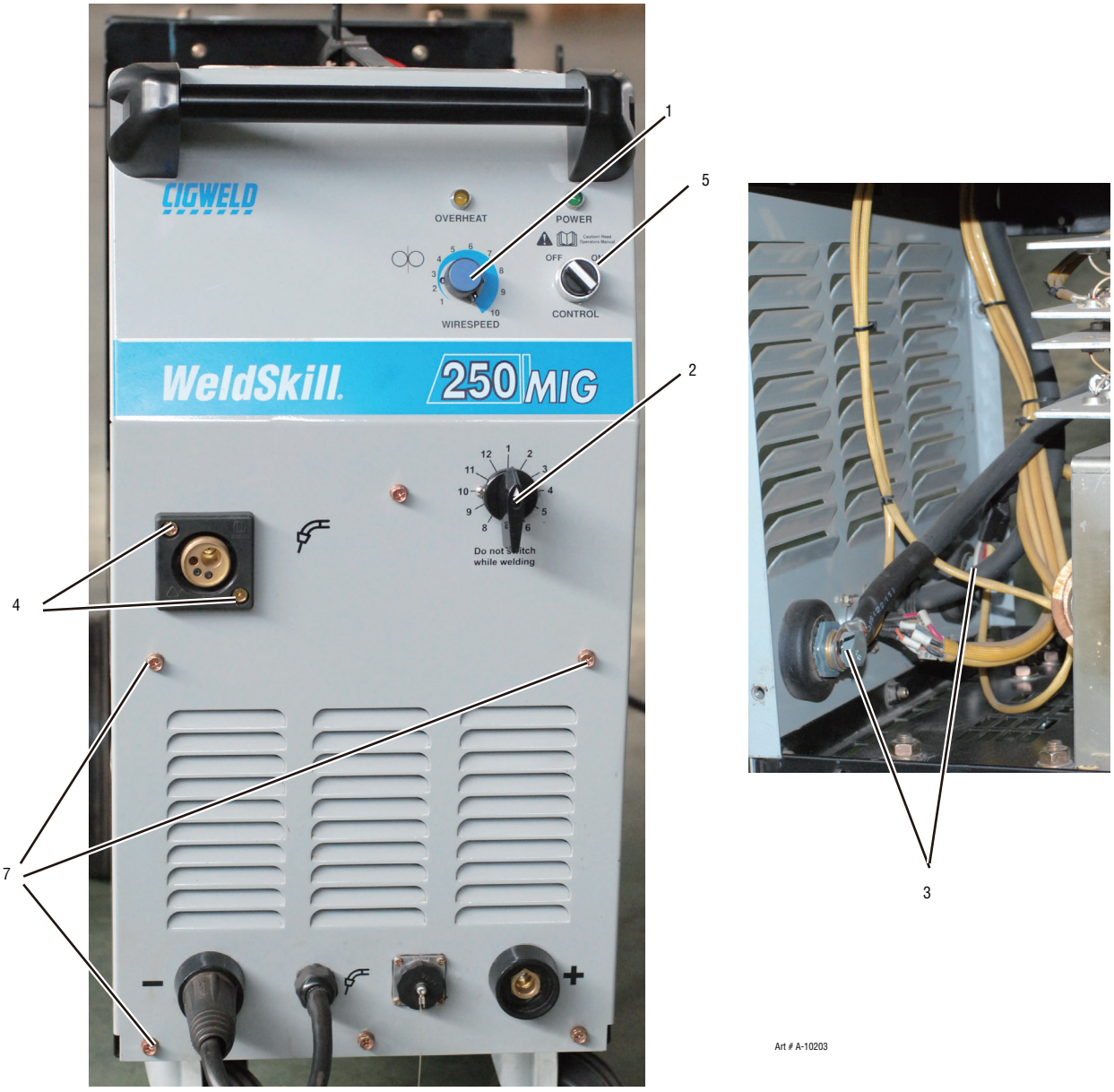


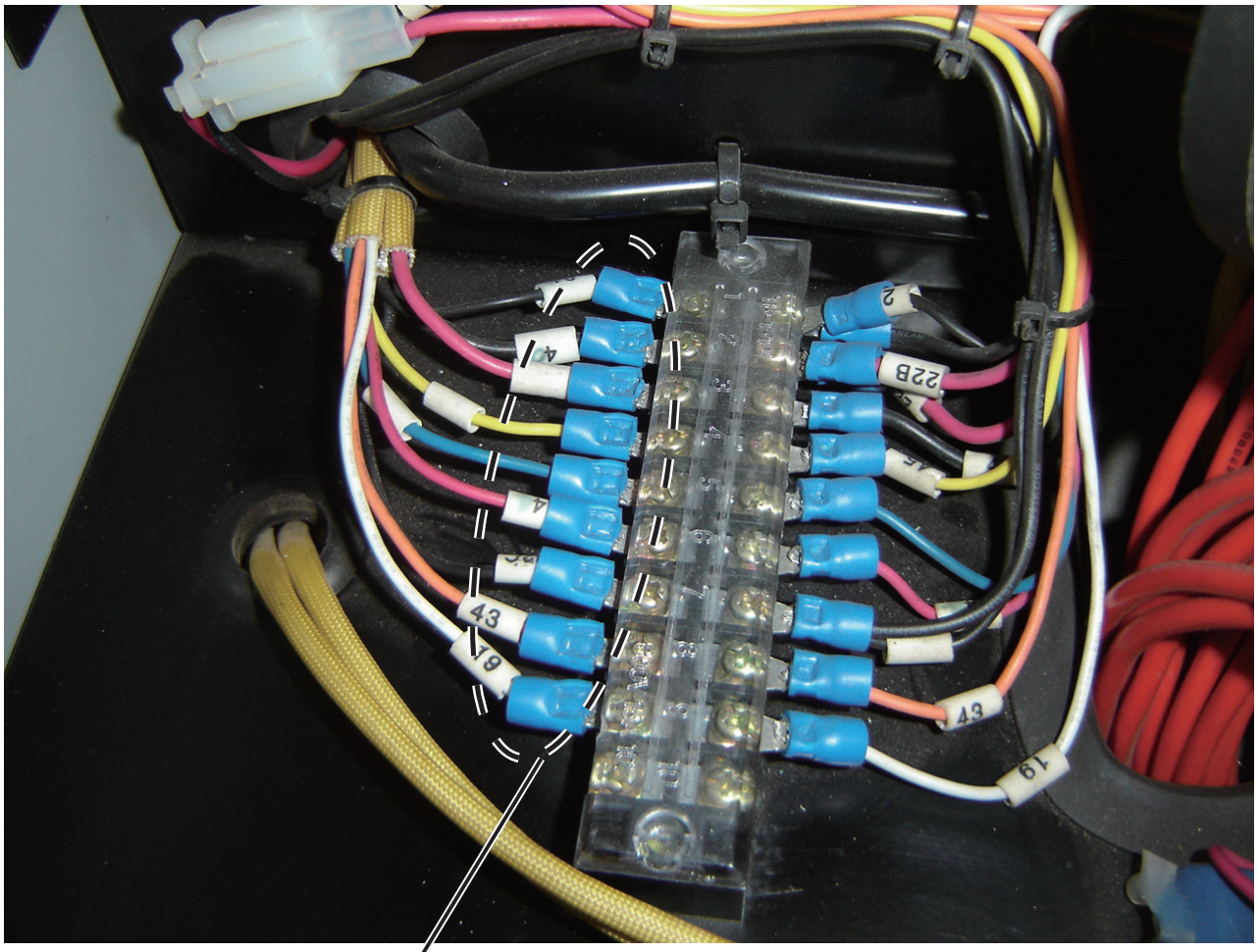
Art # A-10202

7.03 Front Panel Assembly Removal

Read and follow safety information in Section 6.02 before proceeding with disassembly

1. Remove wirespeed control knob by loosening the set screw.
2 Remove output voltage select switch by loosening the set screw.
3. Output terminal bolts. Unscrew power supply output terminal bolts.
4. Mig torch adaptor, remove adaptor cover by loosening the set screw.
5. Remove ON/OFF switch.
6. Remove 4R wirefeeder control socket wires
7. Screws on front panel



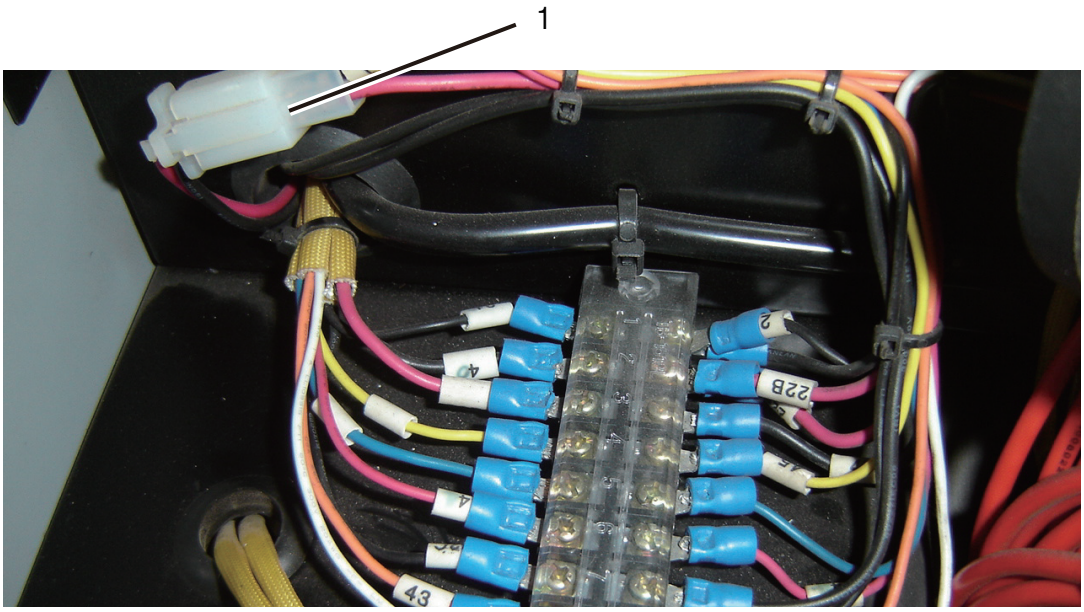


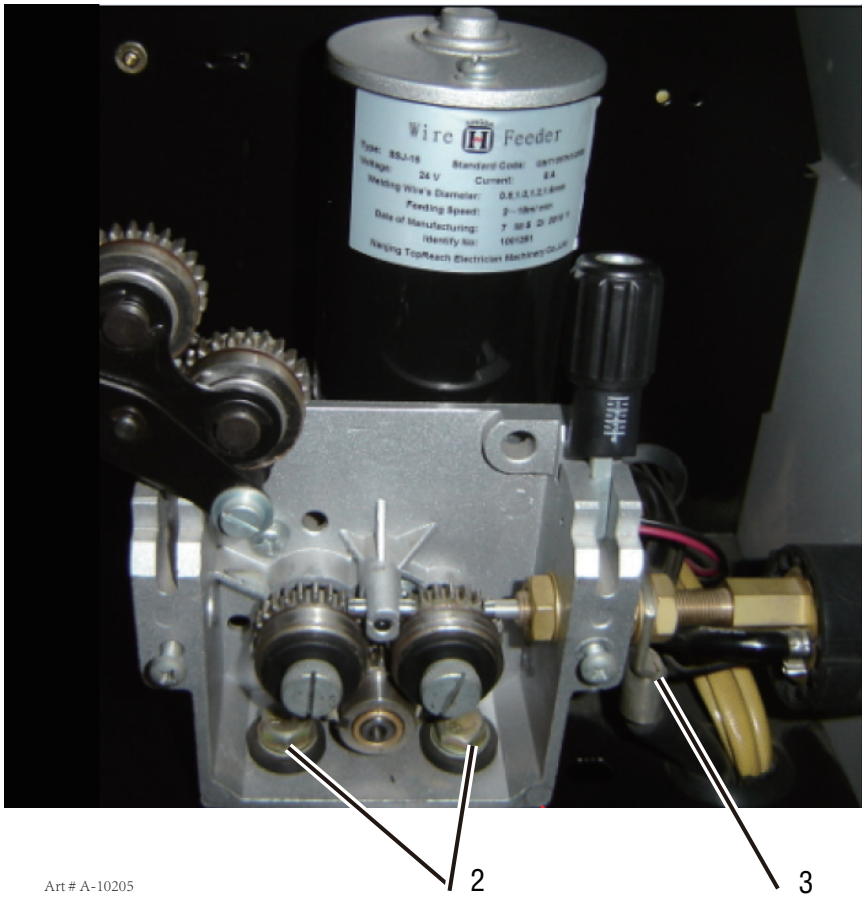
Art # A-10204

7.04 Wirefeeder Assembly Removal

Read and follow safety information in Section 6.02 before proceeding with disassembly

1. Disconnect the wirefeeder connector.
2. Unscrews the wirefeeder fixed bolts.
3. Unscrew torch polarity lead cable terminal bolts and remove it.





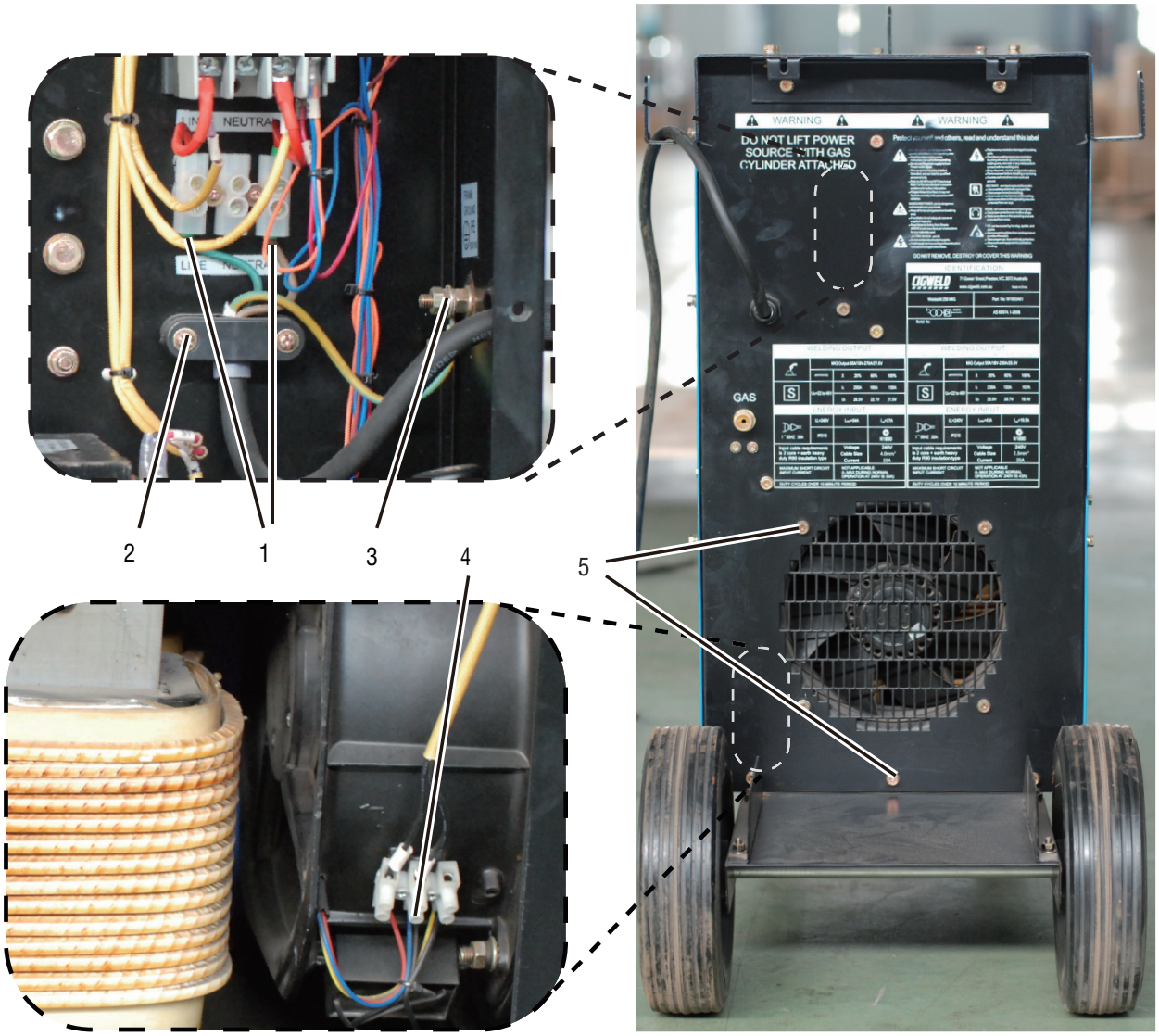
Art # A-10205

7.05 Back Panel Removal

Read and follow safety information in Section 6.02 before proceeding with disassembly

1. Disconnect input cord from terminals.

   Ground wire screw.
2. Disconnect power cord form cable anchorage.
3. Disconnect input cord ground wire from rear panel.
4. Disconnect the fan control wires from terminal.
5. Unscrew the rear panel fixed screw.



Art # A-10206

7.06 Power Switch S1 and Power Cord Removal

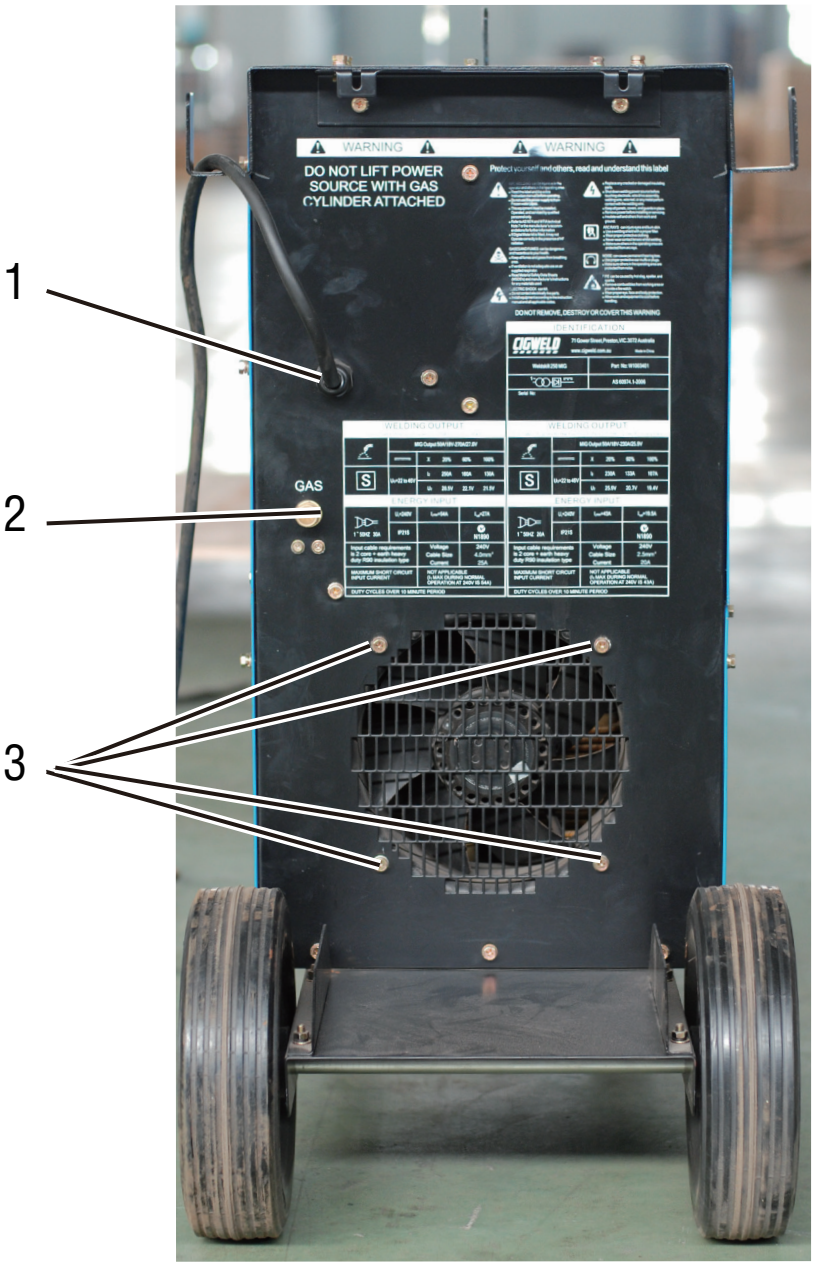
⚠ Read and follow safety information in Section 6.02 before proceeding with disassembly

1. Gas inlet. Remove gas inlet from rear panel.
2. SW1 locking tabs

   Squeeze the locking tabs and push SW1 out from the rear panel.
3. Strain relief screws

   Remove the two (2) screws from the strain relief.
4. Remove Fan.
5 Input Power Cord ground wire filter.

   Cut the tie-wrap and remove the Ferrite core from the ground wire.
6. Pull the Input Power Cord out. It may be necessary to use a flat blade screw driver against the strain relief tabs, prying outward (Internal side if strain relief) to help remove the cord.

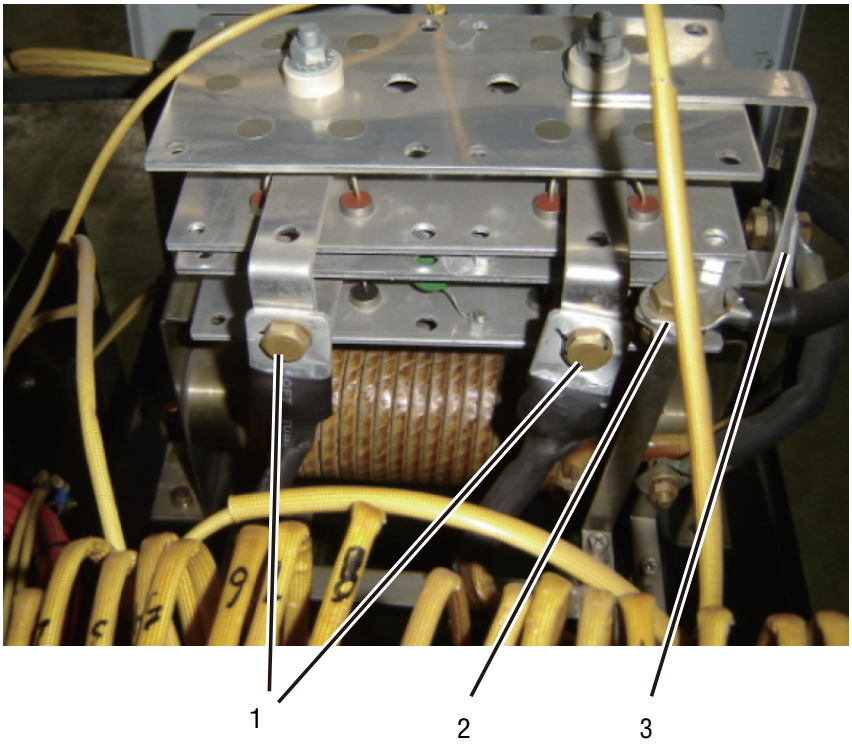


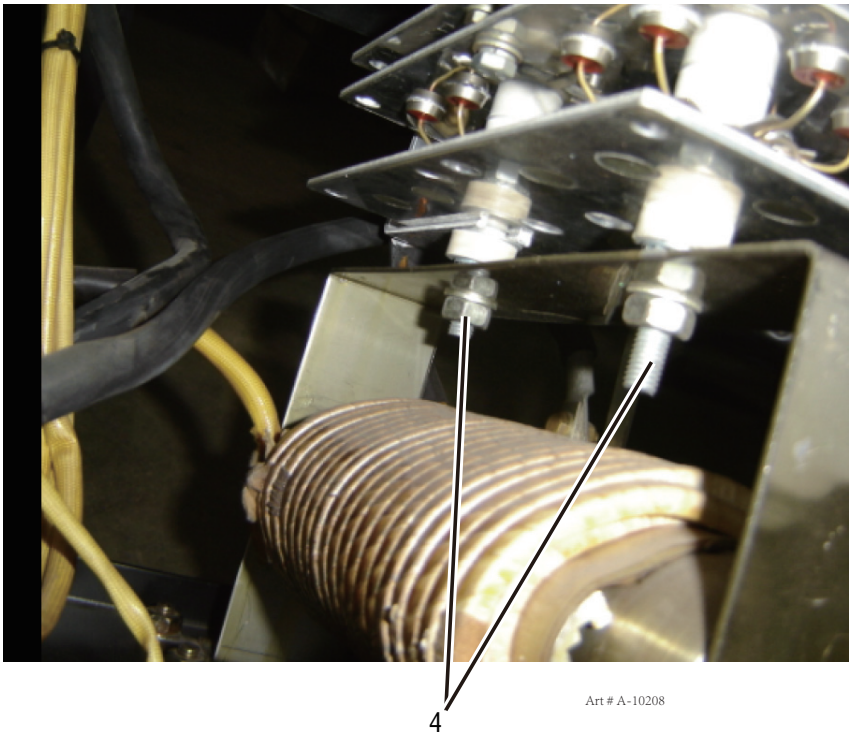
Art # A-10207

7.07 Output Rectifier Removal

Read and follow safety information in Section 6.02 before proceeding with disassembly

1. Remove AC input screws.
2. Remove positive output terminal bolts.
3. Remove positive output terminal bolts.
4. Unscrew fixed screws from inductor



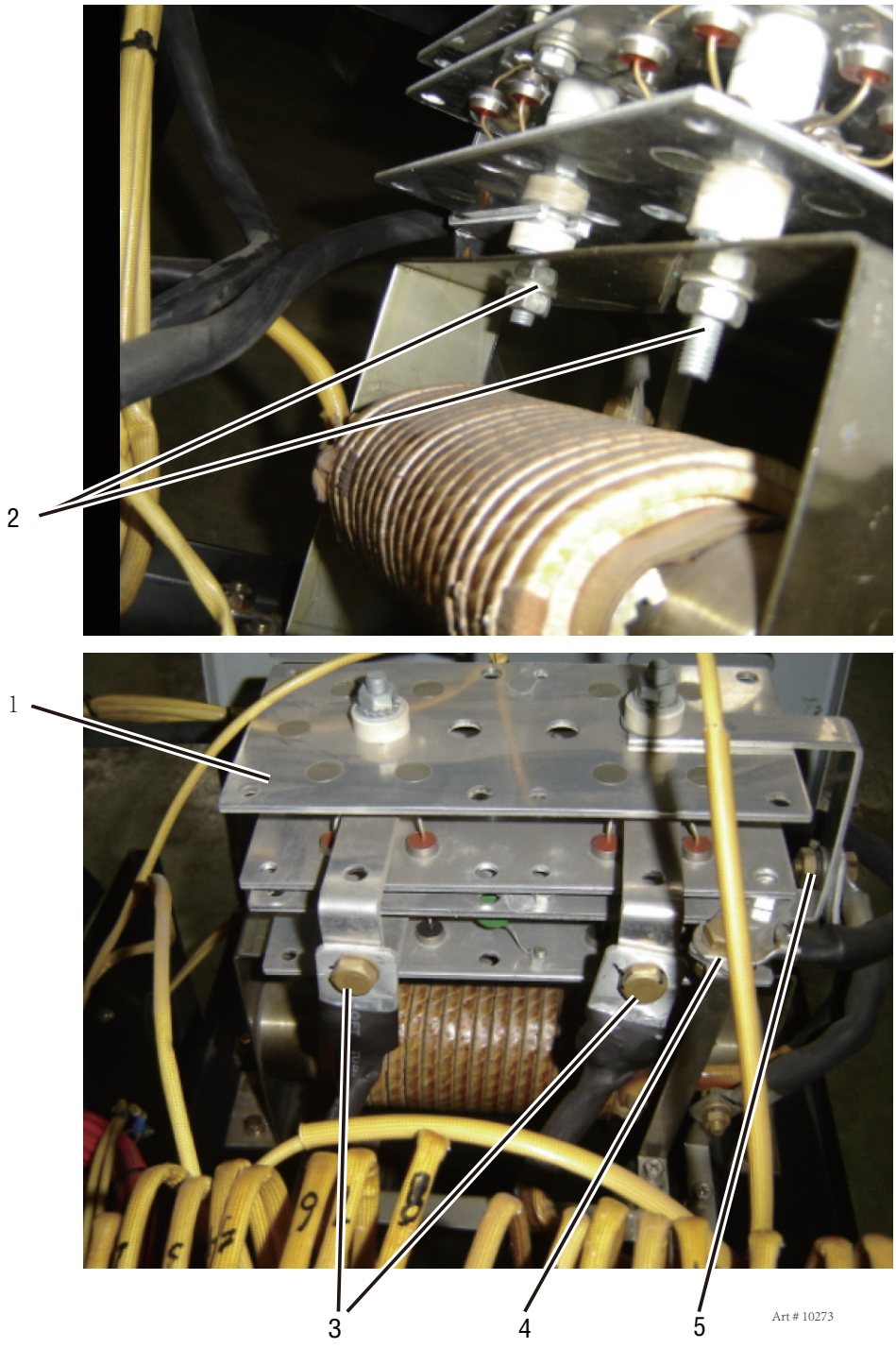


Notes

SECTION 8:
ASSEMBLY PROCEDURES

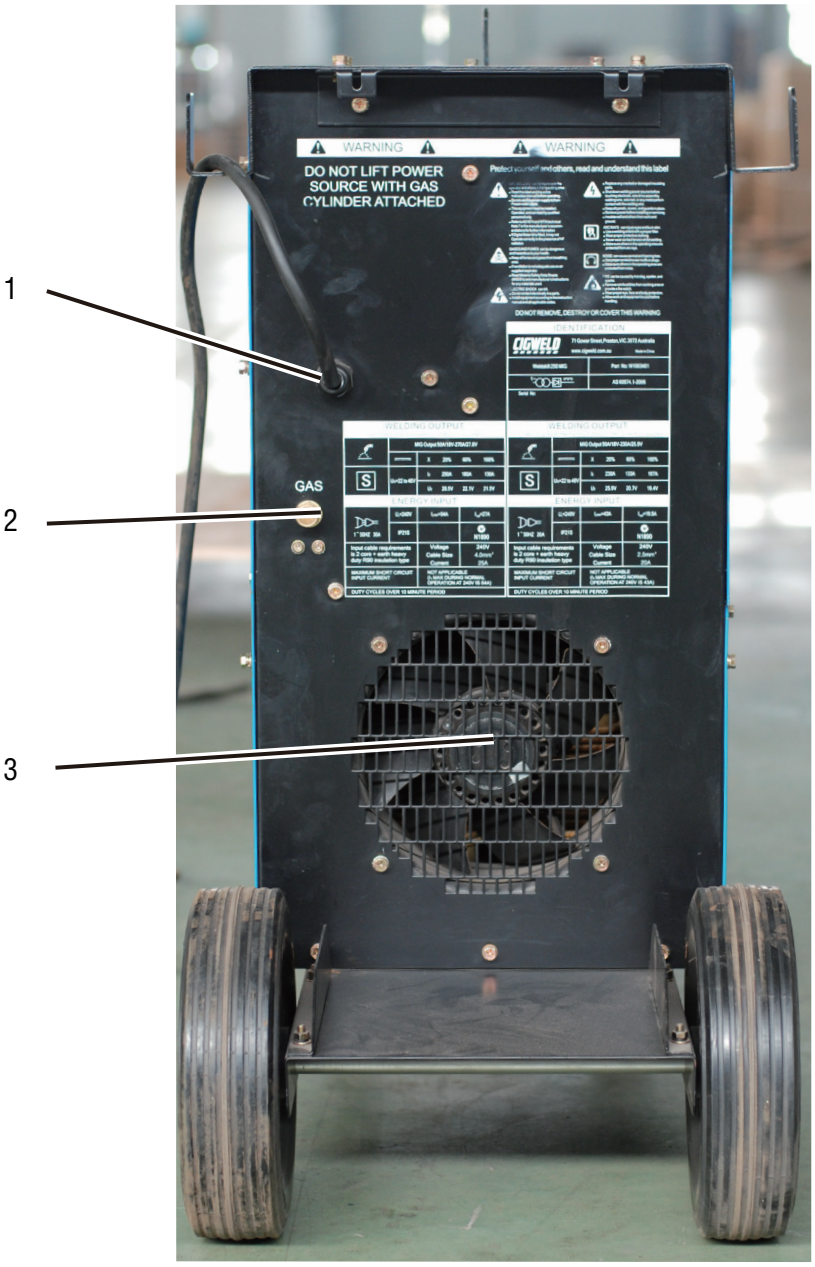
8.01 Installing Output Rectifier Assembly

1. Main output rectifier assembly.
2. Install main rectifier assembly to inductor plate.
3. Reconnect secondary of main transformer to rectifier.
4. Reconnect positive dinse to rectifier output positive.
5. Reconnect negative dinse to rectifier negative.

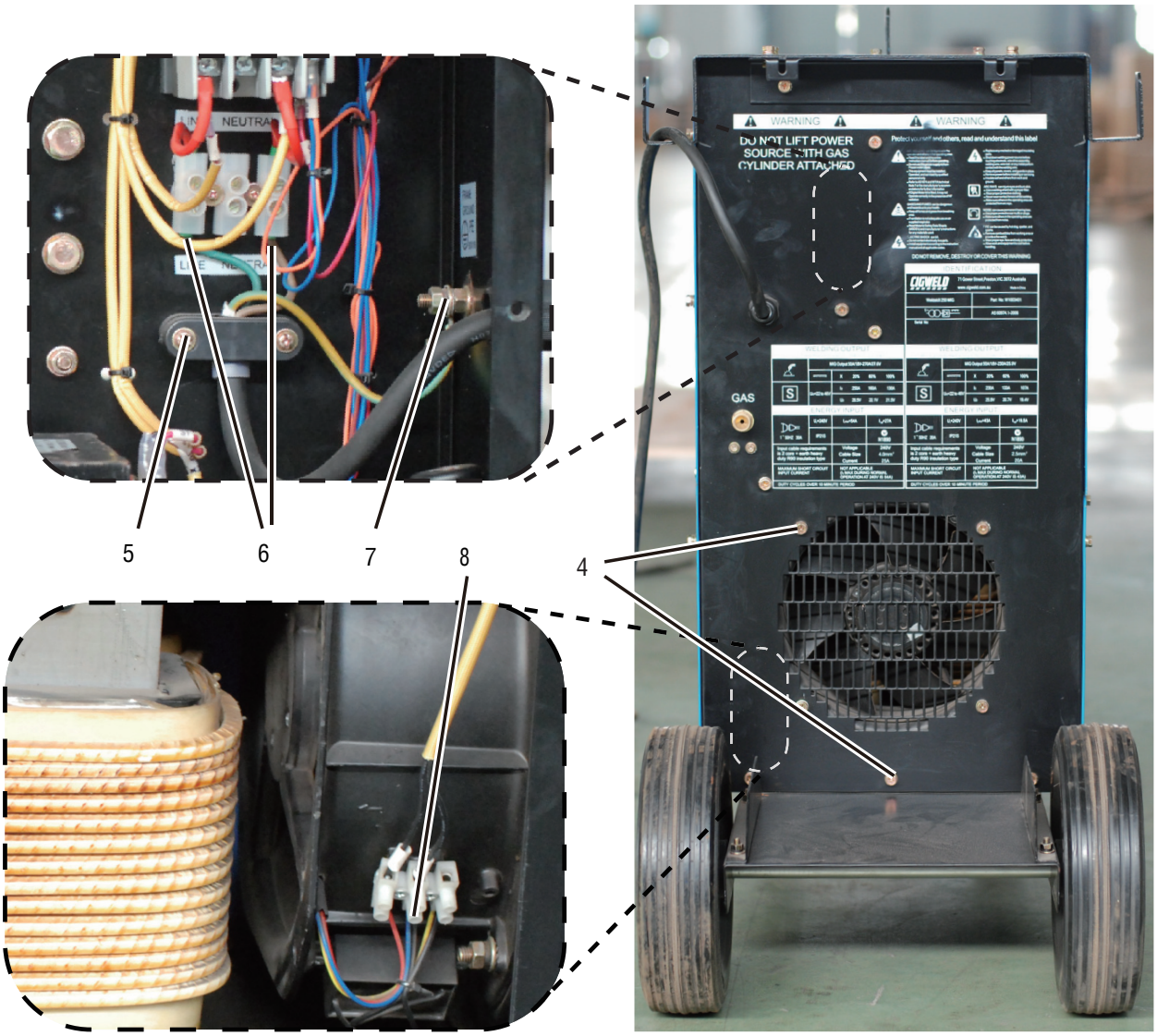


8.02 Installing Back Panel

1. Install power cord (clockwise rotation until tight).
2. Install gas inlet.
3. Install fan.
4. Reconnect Rear Panel screws.
5. Reconnect power cord to cable anchorage.
6. Reconnect power cord ground wire to rear panel.
7. Reconnect input power cord to terminal from AC contactor.
8. Reconnect control wires to fan.



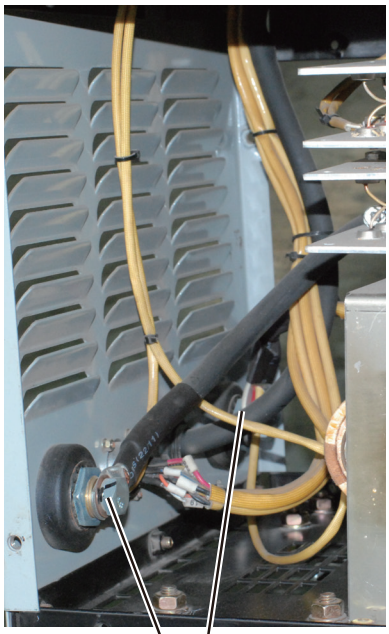
Art # A-10274



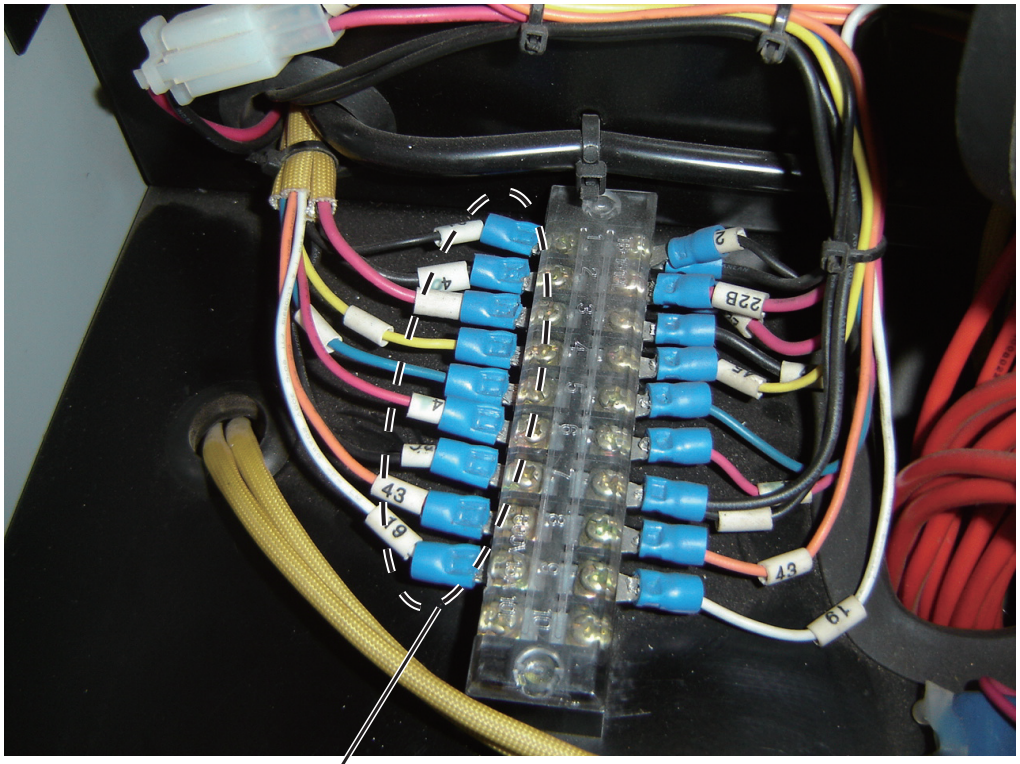
Art # 10275

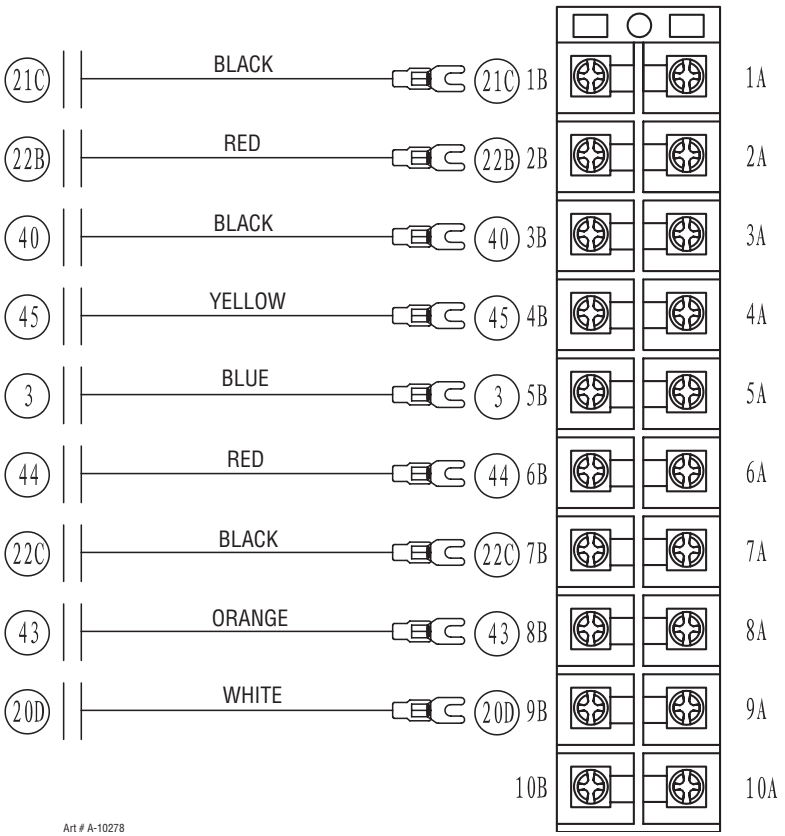
8.03 Installing Front Panel

1. Install potentiometer and knob. Align the knob pointer to line up with maximum correct calibration mark on the panel,then set screw.
2. Install output voltage selection switch.
3. Install power and overheat indicators.
4. Output dinse ,install output dinse.
5. 4R wirefeeder connection socket. Install connection socket by screwer.
6. Torch polarity lead cable .clockwise turn anchorage until tight.
7. ON/OFF switch. Install on/off switch and reconnect input wires to switch,align the switch pointer to line up mark on panel.
8. Install front panel screws and tighten screws.
9. Connect the output cable of rectifier assembly to output dinse.
10. Install MIG torch adaptor and cover plate.
11. Reconnect 4R wirefeeder control wires to the connector block.



Art # A-10276


11
Art # A-10277

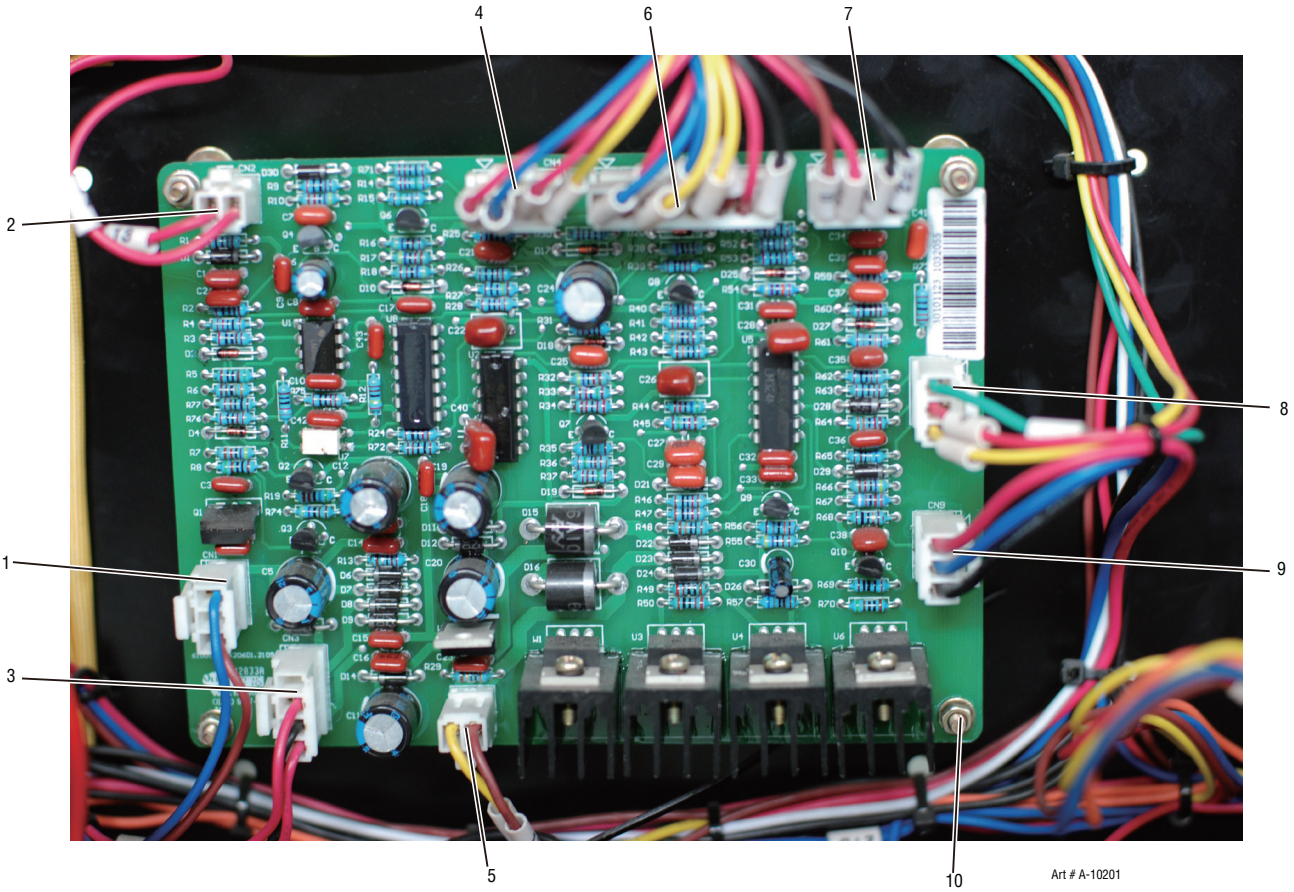

21C
BLACK
21C 1B
1A
22B
RED
22B 2B
2A
40
BLACK
40 3B
3A
45
YELLOW
45 4B
4A
3
BLUE
3 5B
5A
44
RED
44 6B
6A
22C
BLACK
22C 7B
7A
43
ORANGE
43 8B
8A
20D
WHITE
20D 9B
9A
10B
10A
Art # A-10278

8.04 Installing Main Control Panel

Refer to diagram page 8-7.

1. Connect CN1 harness from CN1 connector.
2. Connect CN2 harness from CN2 connector.
3. Connect CN3 harness from CN3 connector.
4. Connect CN4 harness from CN4 connector.
5. Connect CN5 harness from CN5 connector.
6. Connect CN6 harness from CN6 connector.
7. Connect CN7 harness from CN7 connector.
8. Connect CN8 harness from CN8 connector.
9. Connect CN9 harness from CN9 connector.
10. M4 screw, install 4 screws onto control panel.

Verify harness connections with the system schematic to insure all connections are correct.



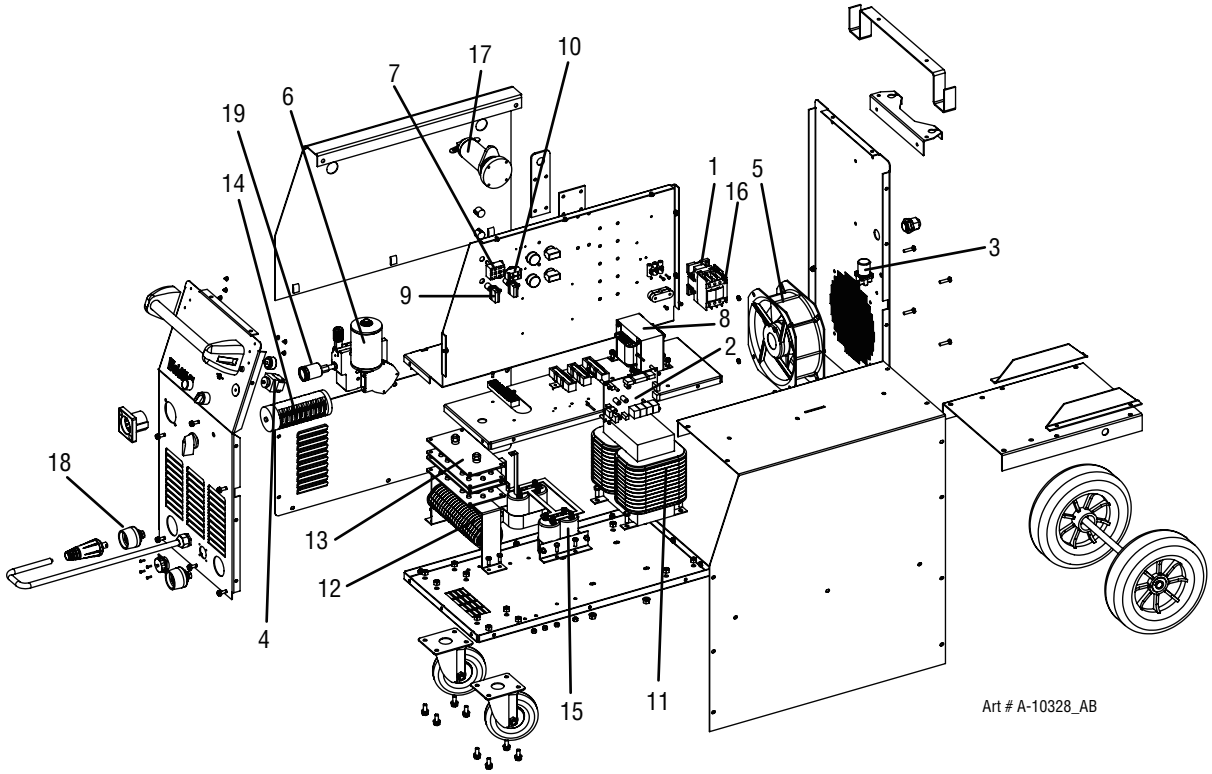
8.05 Installing Case

1. Install Case.
2. Install Screws. Tighten screws.

Notes

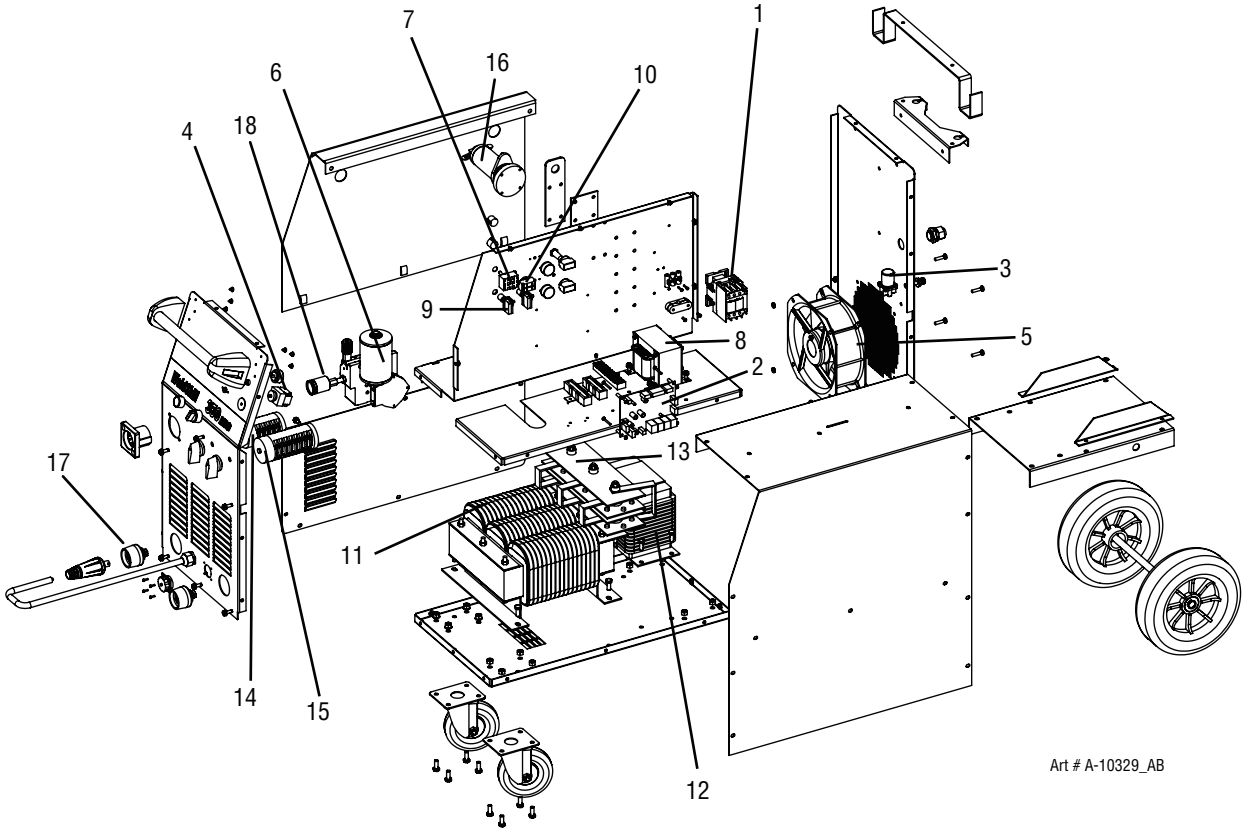
SECTION 9:
REPLACEMENT PARTS

9.01 Power Source



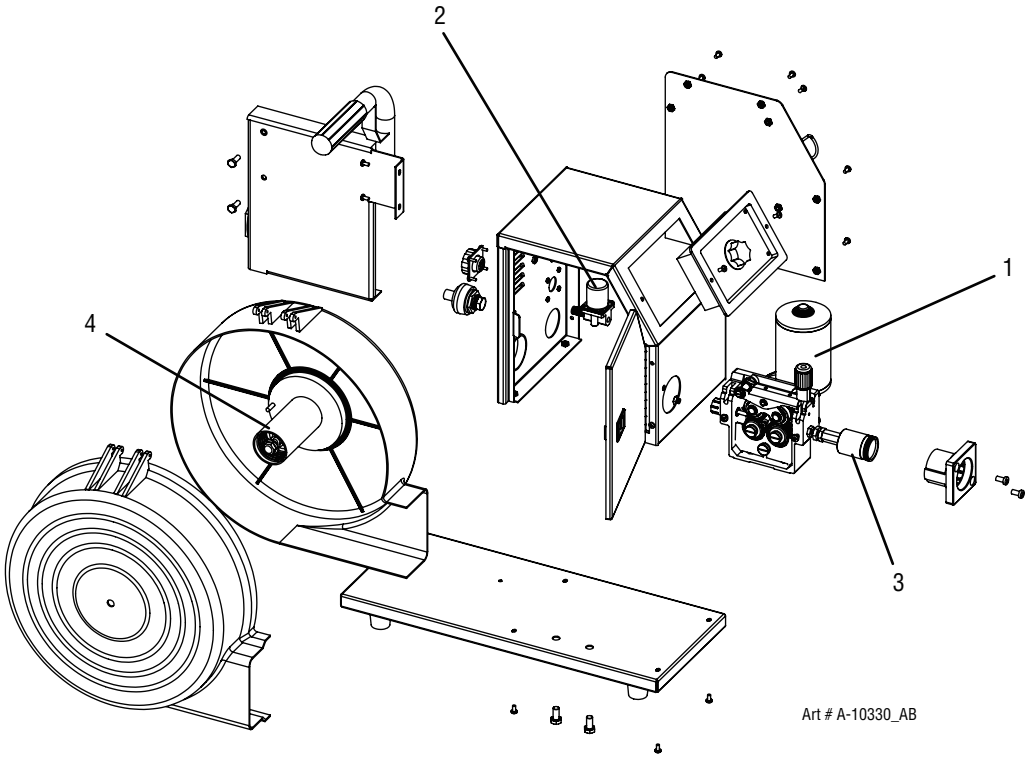
WELDSKILL 250 MIG SPARE PARTS

WELDSKILL 250 MIG SPARE PARTS		
Seq.	**Part No**	**Description**
1	W7004501	Contactor
2	W7004502	PCB Control
3	W7004503	Solenoid Valve, 36VAC
4	W7004505	Switch, On/Off, 415V
5	W7004506	Fan Assembly, 220V
6	W7004540	Wire Drive Assembly
7	W7004541	Local Remote Switch
8	W7004513	Control Transformer
9	W7004515	Inch/Purge Switch
10	W7004518	Switch 2T/4T/Spot
11	W7004526	Main Transformer
12	W7004528	Inductor
13	W7004529	Rectifier Assembly (includes thermostat) 300A
14	W7004530	Switch Voltage 12 Position
15	W7004531	Capacitor 22000uF, 110V
16	W7004527	Auxiliary Contact
17	W7004504	Wire Reel Hub
18	W7004512	Socket Dinse, 50mm
19	W7004542	Euro Adaptor, (includes rear stem assembly)



WELDSKILL 350 MIG SPARE PARTS

WELDSKILL 350 MIG SPARE PARTS		
Seq.	**Part No**	**Description**
1	W7004501	Contactor
2	W7004502	PCB Control
3	W7004503	Solenoid Valve, 36VAC
4	W7004505	Switch, On/Off, 415V
5	W7004506	Fan Assembly, 220V
6	W7004540	Wire Drive Assembly
7	W7004541	Local Remote Switch
8	W7004537	Control Transformer
9	W7004515	Inch/Purge Switch
10	W7004518	Switch 2T/4T/Spot
11	W7004500	Main Transformer
12	W7004507	Inductor Assembly
13	W7004508	Rectifier Assembly (includes thermostat) 400A
14	W7004509	Switch, Coarse Voltage
15	W7004510	Switch, Fine Voltage
16	W7004504	Wire Reel Hub
17	W7004512	Socket Dinse, 50mm
18	W7004542	Euro Adaptor, (includes rear stem assembly)



WELDSKILL 4R WIREFEEDER SPARE PARTS

WELDSKILL 4R WIREFEEDER SPARE PARTS		
Seq.	**Part No**	**Description**
1	W7004540	Wire Drive Assembly
2	W7004539	Solenoid Valve, 36VAC
3	W7004543	Euro Adaptor, (includes rear stem assembly)
4	W7004544	Wire Reel Hub

Notes

SECTION 10:
OPTIONS AND ACCESSORIES

10.01 Options and Accessories

Part Number	Description
7977729	Feed Roll 0.6/0.8mm V Groove - hard wire
7977703	Feed Roll 0.9/1.2mm V Groove - hard wire
7977346	Feed Roll 1.2/1.6mm V Groove - hard wire
7977733	Feed Roll 0.8/ 0.9mm U Groove - soft wire
7977730	Feed Roll 1.0/1.2mm U Groove - soft wire
7977348	Feed Roll 1.2/1.6mm U Groove - soft wire
7977734	Feed Roll 0.8/0.9mm V Knurled - flux cored
7977347	Feed Roll 1.2/1.6mm V Knurled - flux cored
FAB250X12	MIG Torch 250A Euro (South Pacific Only)
FAB400X12	MIG Torch 400A Euro (South Pacific Only)
210254	WeldSkill Regulator/Flowmeter (South Pacific Only)

Table 10-1 Optional Accessories for WeldSkill 250, 350 MIGs and 4R Wirefeeder

Notes

CIGWELD LIMITED WARRANTY

LIMITED WARRANTY: CIGWELD, A Victor Technologies Company, hereafter, "CIGWELD" warrants to customers of its authorized distributors hereafter "Purchaser" that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the CIGWELD products as stated below, CIGWELD shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with CIGWELD's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at CIGWELD's sole option, of any components or parts of the product determined by CIGWELD to be defective.

CIGWELD MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHERS, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: CIGWELD SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, SUCH AS, BUT NOT LIMITED TO, LOST PROFITS AND BUSINESS INTERRUPTION. The remedies of the Purchaser set forth herein are exclusive and the liability of CIGWELD with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by CIGWELD whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based. No employee, agent, or representative of CIGWELD is authorized to change this warranty in any way or grant any other warranty.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH IN CIGWELD'S SOLE JUDGEMENT MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY CIGWELD PRODUCT. PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF THE PRODUCT IS SOLD TO PURCHASER BY NON-AUTHORIZED PERSONS.

The warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date CIGWELD delivered the product to the authorized distributor.

TERMS OF WARRANTY – JANUARY 2011

1. The Trade Practices Act 1974 (Commonwealth) and similar State Territory legislation relating to the supply of goods and services, protects consumers' interests by ensuring that consumers are entitled in certain situations to the benefit of various conditions, warranties, guarantees, rights and remedies (including warranties as to merchantability and fitness for purpose) associated with the supply of goods and services. A consumer should seek legal advice as to the nature and extent of these protected interests. In some circumstances, the supplier of goods and services may legally stipulate that the said conditions, warranties, guarantees, rights and remedies are limited or entirely excluded. The warranties set out in Clause 2 shall be additional to any non excludable warranties to which the Customer may be entitled pursuant to any statute.

2. Subject to Clause 3. CIGWELD gives the following warranties to the Customer:

   Insofar as they are manufactured or imported by CIGWELD, goods will upon delivery be of merchantable quality and reasonably fit for the purpose for which they are supplied by CIGWELD.

   CIGWELD will repair or, at its option, replace those of the goods which, upon examination, are found by CIGWELD to be defective in workmanship and/or materials.

   CIGWELD reserves the right to request documented evidence of date of purchase.

3. The Warranty in Clause 2;

   Is conditional upon:

   The Customer notifying CIGWELD or our Accredited Distributor in writing of its claim within seven (7) days of becoming aware of the basis thereof, and at its own expense returning the goods which are the subject of the claim to CIGWELD or nominated Accredited Distributor/Accredited Service Provider. The goods being used in accordance with the Manufacturer's Operating Manuals, and under competent supervision.

   Does not apply to:

   Obsolete goods sold at auction, second-hand goods and prototype goods.

   Breakdown or malfunction caused by accident, misuse or normal wear and tear.

   Repairs or replacement made other than by CIGWELD or Accredited Service Providers, unless by prior arrangement with CIGWELD.

   Replacement parts or accessories which may affect product safety or performance and which are not manufactured, distributed or approved by CIGWELD.

4. CIGWELD declares that, to the extent permitted by law, it hereby limits its liability in respect of the supply of goods which are not of a kind ordinarily acquired for personal, domestic or household use or consumption to any one or more of the following (the choice of which shall be at the option of CIGWELD).

   The replacement of the goods or the supply of equivalent goods.

   The repair of goods.

   The payment of cost of replacing the goods or acquiring equivalent goods.

   The payment of the cost of having goods repaired.

5. Except as provided in Clauses 2 to 4 above, to the extent permitted by statute, CIGWELD hereby excludes all liability for any loss, damage, death or injury of any kind whatsoever occasioned to the Customer in respect of the supply of goods including direct, indirect, consequential or incidental loss, damage or injury of any kind.

WARRANTY SCHEDULE – JANUARY 2011

These warranty periods relate to the warranty conditions in clause 2. All warranty periods are from date of sale from the Accredited Distributor of the equipment. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date CIGWELD delivered the product to the Accredited Distributor. Unless otherwise stated the warranty period includes parts and labour. CIGWELD reserves the right to request documented evidence of date of purchase.

WELDSKILL 250 AND 350 MIG POWER SOURCES WELDSKILL 4R WIREFEEDER	**WARRANTY PERIOD**	
	PARTS	**LABOUR**
Original main power rectifier, main power magnetics and control printed circuit boards	1 Year	1 Year
All other circuits and components including, but not limited to, relays, switches, contactors, solenoids, fans and power switch.	1 Year	1 Year
WELDSKILL 250 AND 350 MIG ACCESSORIES	**WARRANTY PERIOD**	
MIG torch and work lead.	3 Months	
MIG torch consumable items.	NIL	
Gas regulator/flowmeter (excluding seat assembly, pressure gauges, elastomer seals and “O” rings).	1 Year	
Regulator seat assemblies and pressure gauges.	6 Months	
Elastomer seals and “O” rings used in the equipment.	3 Months	

Please note that the information detailed in this statement supersedes any prior published data produced by CIGWELD.

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